<R42-239-0>

Service Manual

AM/FM STEREO RECEIVER

SX-727 / KUW,FVZW,FW

NOTE

MODEL SX-727 COMES IN THREE VERSIONS DISTINGUISHED AS FOLLOWS:

Round label on rear panel	Voltage	Type
KUW	120V only	UL approved(U.S.A.)
FVZW	5-position selector	FTZ approved(West Germany)
FW	5-position selector	General export model

<7IL03Y6IF>

PIONEER®

CONTENTS

1. SPECIFICATIONS 1

2. FRONT PANEL FACILITIES 3

3. CONNECTION DIAGRAM 5

4. BLOCK DIAGRAM 7

5. DISASSEMBLY

   5-1 Wooden case 9

   5-2 Bottom plate 9

   5-3 Front panel 9

6. PARTS AND PCB LOCATION 10

7. DIAL CORD STRINGING 11

8. ALIGNMENT PROCEDURE

   8-1 Required instruments 12

   8-2 FM 10.7MHz alignment 12

   8-3 FM front end alignment 12

   8-4 FM MPX decoder alignment 12

   8-5 Muting threshold level alignment 13

   8-6 AM 455kHz alignment 13

   8-7 AM tracking alignment 13

9. PACKING METHOD AND PART NUMBERS 14

10. SCHEMATIC DIAGRAMS , PCB PATTERNS AND PARTS LIST

   10-1 Unit connection diagram and miscellaneous parts 15

   10-2 FM front end 23

   10-3 FM/AM unit 24

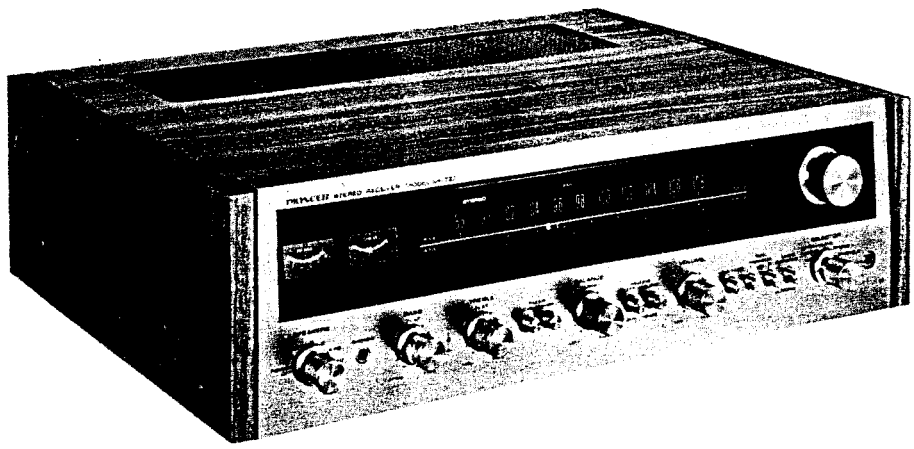
   10-4 CR unit 30

   10-5 Head amp unit 32

   10-6 AF unit 34

   10-7 Power amp unit 38

10-8 Power supply unit 42
10-9 Protector unit 44



1. SPECIFICATIONS

SEMICONDUCTORS

FETs 4	Transistors 56
ICs 4	Diodes 37

POWER AMPLIFIER SECTION

Music Power Output (IHF)	195 Watts (4Ω) 122 Watts (8Ω)
Continuous Power Output (1kHz: each channel driven)	69W/69W (4Ω) 48W/48W (8Ω)
Continuous Power Output (1kHz: both channels driven)	50W + 50W (4Ω) 40W + 40W (8Ω)
Power Output in the Range of 20Hz to 20kHz (both channels driven)	37W + 37W (8Ω, Harmonic Distortion less than 0.5%)
Harmonic Distortion	Less than 0.5% (Continuous power output) Less than 0.03% (8Ω, 24W/24W power output)
Intermodulation Distortion	Less than 0.5% (Continuous power output) Less than 0.03% (8Ω, 24W/24W power output)
Power Bandwidth (IHF)	10Hz to 60kHz (8Ω, Harmonic Distortion less than 0.5%)
Frequency Response	7Hz to 80kHz, ±1dB
Input Sensitivity/Impedance (1kHz, continuous power output)	500mV/50kΩ
Speakers	4 to 16Ω
Damping Factor	40 (8Ω, 1kHz)

PREAMPLIFIER SECTION

Output Voltage	500mV (Rated output), 4V (Max.)
Harmonic Distortion	Less than 0.1%
Frequency Response	10Hz to 20kHz, ±1dB
Input Sensitivity/Impedance (1kHz, for rated output)	PHONO 1 MAG 3mV/50kΩ PHONO 2 MAG 3mV/50kΩ MIC 2.7mV/50kΩ AUX 200mV/100kΩ TAPE MONITOR 1, 2 200mV/100kΩ
Recording Output	TAPE REC 1, 2 (Pin jack) 200mV TAPE REC (DIN connector) 35mV
BASS Control	−10dB, + 10dB/100Hz
TREBLE Control	−10dB, + 10dB/10kHz
LOW Filter	−8dB/50Hz (6dB/oct.)
HIGH Filter	−9dB/10kHz (6dB/oct.)
Equalization Curve	PHONO: RIAA S.T.D.
Loudness Contour	+10dB/100Hz, + 6dB/10kHz with Volume Control set at −40dB position.
Muting	−20dB
Hum and Noise (IHF)	PHONO More than 85dB AUX More than 95dB

FM TUNER SECTION

Frequency Range	88MHz to 108MHz 87.5MHz to 108MHz (FTZ approved)
Usable Sensitivity (IHF)	1.8μV
Capture Ratio (IHF)	2.0dB
Selectivity (IHF)	More than 70dB
Image Rejection	More than 85dB (98MHz)
IF Rejection	More than 100dB (90MHz)
Spurious Rejection	More than 90dB (98MHz)
AM Suppression	50dB
Signal-to-Noise Ratio	70dB
Harmonic Distortion	Mono: Less than 0.3% (100% Mod.) Stereo: Less than 0.5% (100% Mod.)
Tuning Indicator	Signal strength type and Center tuning type
Muting	Switchable to ON-OFF
Stereo Separation	More than 40dB (1kHz)
Sub Carrier Suppression	More than 50dB
Antenna Input	Impedance 300Ω balanced and 75Ω unbalanced.

AM TUNER SECTION

Frequency Range	525kHz to 1,605kHz
Usable Sensitivity (IHF)	10μV
Selectivity (IHF)	More than 35dB
Image Rejection	More than 80dB (1,000kHz)
IF Rejection	More than 75dB
Signal-to-Noise Ratio	More than 50dB
Antenna	Built-in ferrite loopstick antenna

MISCELLANEOUS

Power Requirements	120V 60Hz, or 110V, 120V, 130V, 220V and 240V (switchable) 50-60Hz
Power Consumption	270W (Max.)
AC Outlets	Switched 1, Unswitched 2.
Dimensions (overall)	19-$\frac{1}{16}$ in./485mm (width) 5-$\frac{7}{8}$ in./150mm (height) 15-$\frac{3}{8}$ in./390mm (depth)
Weight Without package	30lb, 14oz/14kg
With package	37lb, 8oz/17kg

Furnished Parts

FM T-type Antenna	1	Fuse 1.5A (5 line voltage model only)	1
Pin Plug	2	3A	2
Speaker Plug	6	Polishing Cloth	1
		Operating Instructions	1

NOTE: Specifications and the design subject to possible modification without notice due to improvements.

2. FRONT PANEL FACILITIES

SPEAKERS SWITCH

A combination of the power ON/OFF switch and the speaker system selector switch

POWER OFF . . The equipment is off.
A . . . . . The speaker systems plugged into the A speaker sockets is in operation.
SPKR OFF. . . . All speaker systems off.
Useful for listening through headphones.
B . . . . . The speaker systems plugged into the B speaker sockets is in operation.
C . . . . . The speaker systems plugged into the C speaker sockets is in operation.
A + B . . . . . Both speaker systems A and B are energized.
A + C . . . . . Both speaker systems A and C are energized.

PHONES JACK

Use this to plug in stereo headphones
A full selection of high-performance headphones is available from Pioneer.

BASS & TREBLE CONTROLS

Used for adjusting bass and treble.
Clockwise (counterclockwise) turning of these controls from the FLAT position will boost (diminish) tone. Also, only the left (right) channel can be adjusted by turning the front (rear) part while the other part is being held.
Adjustment of both channels or only the left channel is made by click-stops. For normal listening, set it to the FLAT position.

FILTER SWITCHES

LOW: Setting this switch to ON will eliminate low noises such as record rumble, hum, or other interference. The switch is normally set to OFF unless the filter is required.
HIGH: Setting this switch to ON will eliminate high noises, such as record scratch, static noise from fluorescent lamps, or other interference. The switch is normally set to OFF unless the filter is required.
Note that the switches are ON when pushed.

BALANCE CONTROL

This knob is used for adjusting the stereo balance. When the volume of the right channel speaker is smaller, turn the knob clockwise toward RIGHT: when left channel volume is smaller, turn the knob counter-clockwise toward LEFT. For normal listening, set it to the NORM position

FM MUTING SWITCH

This switch is used to suppress noise between FM stations. In a fringe area, however, this switch should be kept OFF because it may suppress the desired station signal at the same time. Note that this switch is OFF when it is pushed, and ON when released.

AUDIO MUTING SWITCH

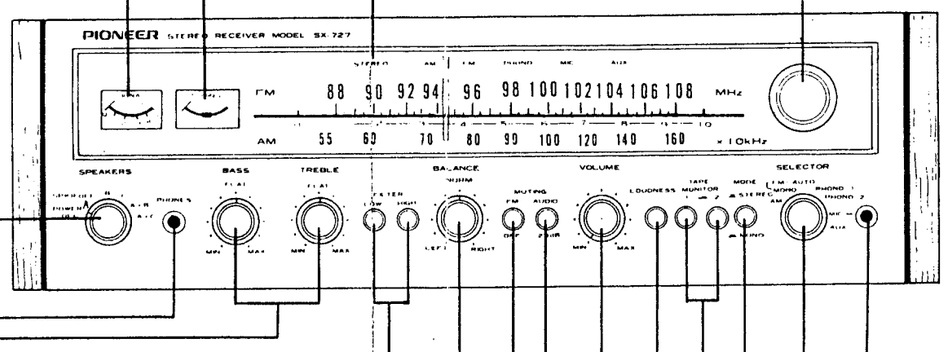
In position ON (switch pushed), the volume will be attenuated by 20dB. Push once again to restore the volume to its former level.

SIGNAL METER

This meter indicates the optimum tuning point for AM and FM stations. When the needle deflects all the way to the right, the station has been properly tuned in.

FM TUNING METER

When tuning in an FM mono or FM stereo broadcast, this meter should be used to make the tuning perfect. After the desired station has been properly tuned in with the SIGNAL METER, adjust the TUNING KNOB so that the needle comes to the center.



VOLUME CONTROL

The volume increases when this knob is turned clockwise.

LOUDNESS SWITCH

When listening at low volume level, set this switch ON position. This emphasizes the extreme ends of the sound spectrum, giving a more natural sound contour.

TAPE MONITOR SWITCHES (1 and 2)

These switches are set to ON for monitoring of a recording in progress or playback of recorded tapes with tape decks.
Note that the switches are ON when pushed.

1 This switch is set to ON for using a tape deck plugged into TAPE 1 MON jacks and TAPE 1 REC jacks or TAPE REC/P.B. connector.
2 This switch is set to ON for using a tape deck plugged into TAPE 2 MON jacks and TAPE 2 REC jacks.

NOTE: For phonograph records, or broadcasts, leave these switches in OFF position. If the switches are set to ON, no sound will be heard

FM STEREO INDICATOR

This lamp will light when an FM stereo broadcast is tuned in.

TUNING KNOB

Used to tune in the desired station.

MIC JACK

Accepts the plug of the microphone. Use a suitable microphone with a 1/4 in. (6mm) standard plug.

SELECTOR SWITCH

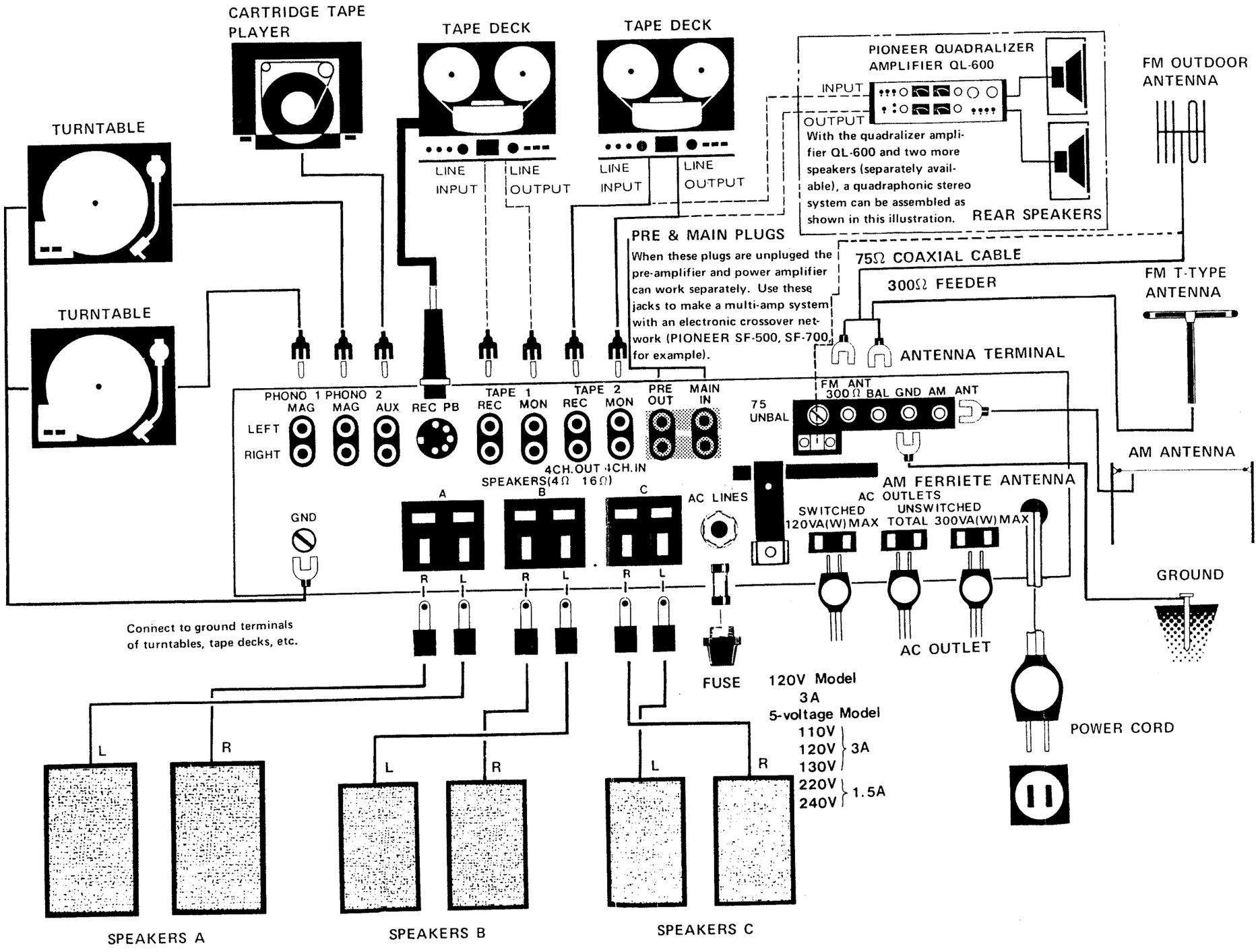
Choose the program source.

AM . . . . . AM reception.
FM MONO. . . . FM monophonic reception only.
FM AUTO . . . . FM reception with automatic switching for either stereo or monophonic programs.
PHONO 1 . . . . For playing records on a turntable plugged into the PHONO 1 jacks.
PHONO 2 . . . . Same as above, for PHONO 2 jacks.
MIC . . . . . Microphone sound can be reproduced.
AUX. . . . . For playing signals fed to the AUX jacks.

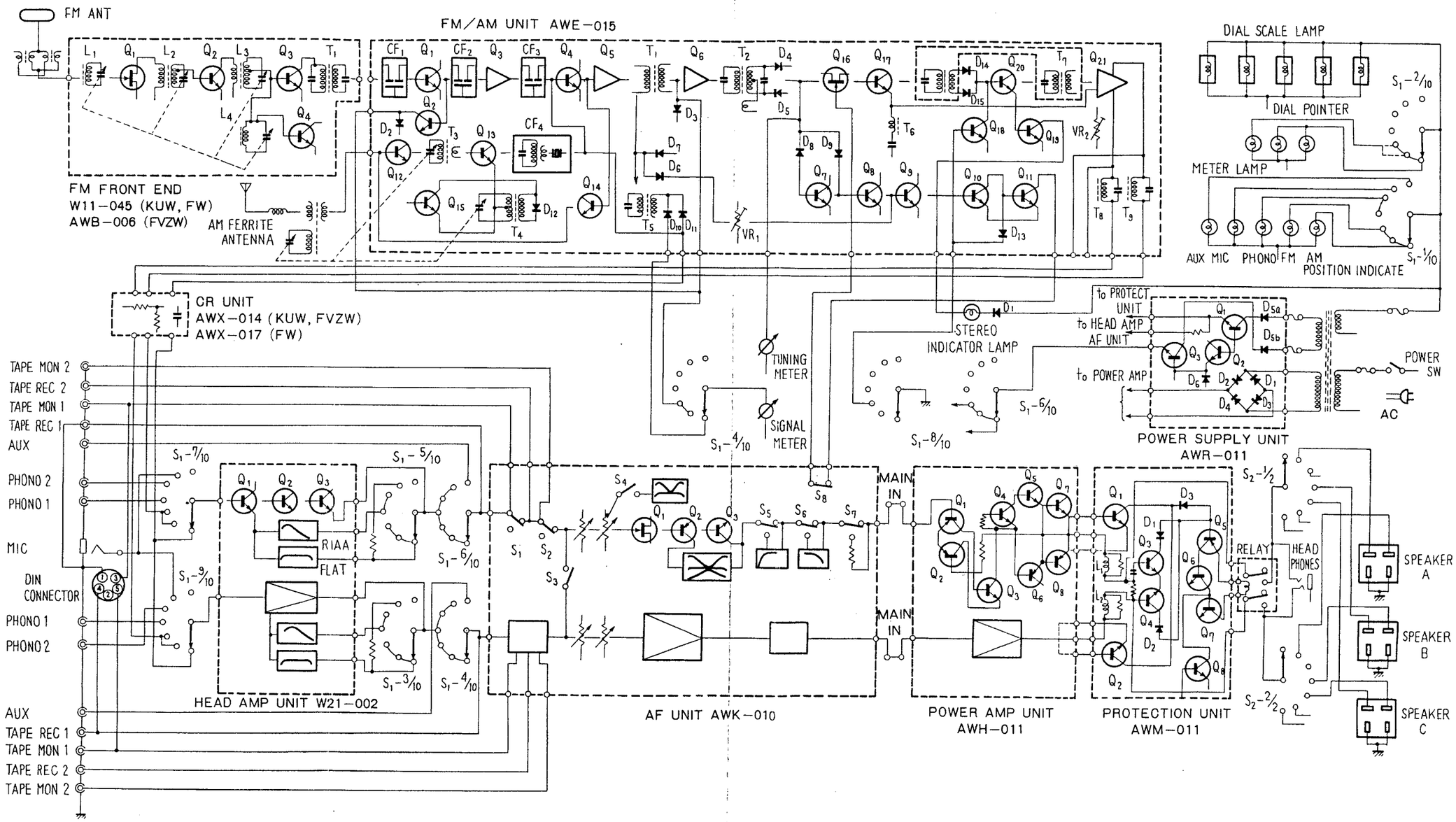
MODE SWITCH

STEREO . . . . . Normal stereo when the switch is not pushed.
MONO . . . . . Monophonic play with left and right channel input signals mixed and reproduced from both channel speakers.

3. CONNECTION DIAGRAM



4. BLOCK DIAGRAM



S_1 INPUT SELECTOR	S_2 OUTPUT SELECTOR	IN AF UNIT
1. AM	1. POWER OFF	S_1 TAPE MONITOR 1
2. FM	2. SPEAKER A	S_2 TAPE MONITOR 2
3. FM AUTO	3. 〃 OFF	S_3 MODE
4. PHONO 1	4. 〃 B	S_4 LOUDNESS
5. PHONO 2	5. 〃 C	S_5 LOW FILTER
6. MIC	6. 〃 A+B	S_6 HIGH FILTER
7. AUX	7. 〃 A+C	S_7 AUDIO MUTING
		S_8 FM MUTING

5. DISASSEMBLY

5-1 WOODEN CASE

Remove the 4 screws from the side of the wooden case. Pull the case backward off from the receiver housing. See Photo 1.

5-2 BOTTOM PLATE

The bottom plate can be removed after loosening the 8 screws. See Photo 2.

5-3 FRONT PANEL

Pull of all knobs, then remove nuts and washers from shafts and remove 2 screws from top of front panel as in Photo 4. The front panel can now be removed.

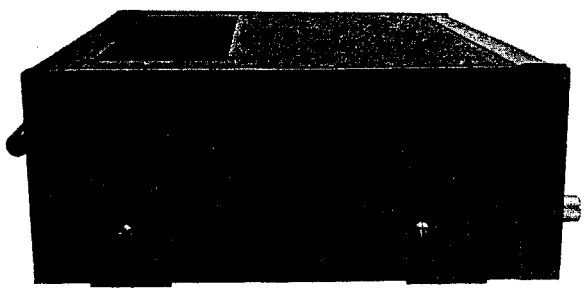


Photo 1

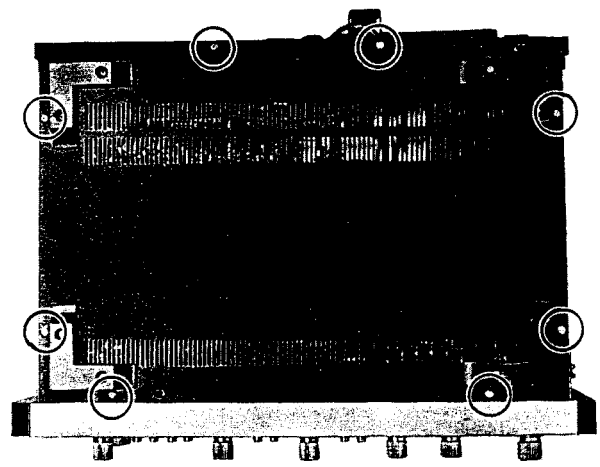


Photo 2

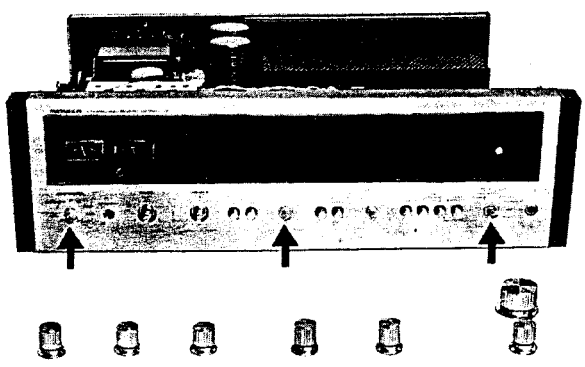


Photo 3

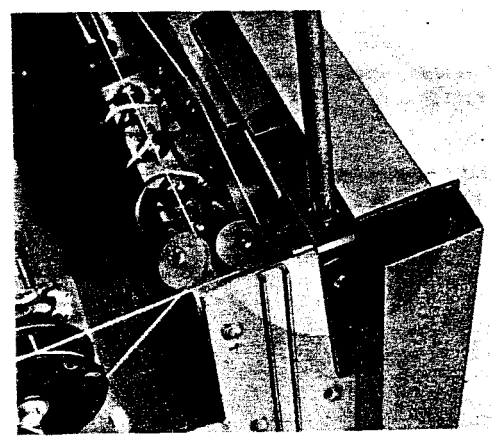
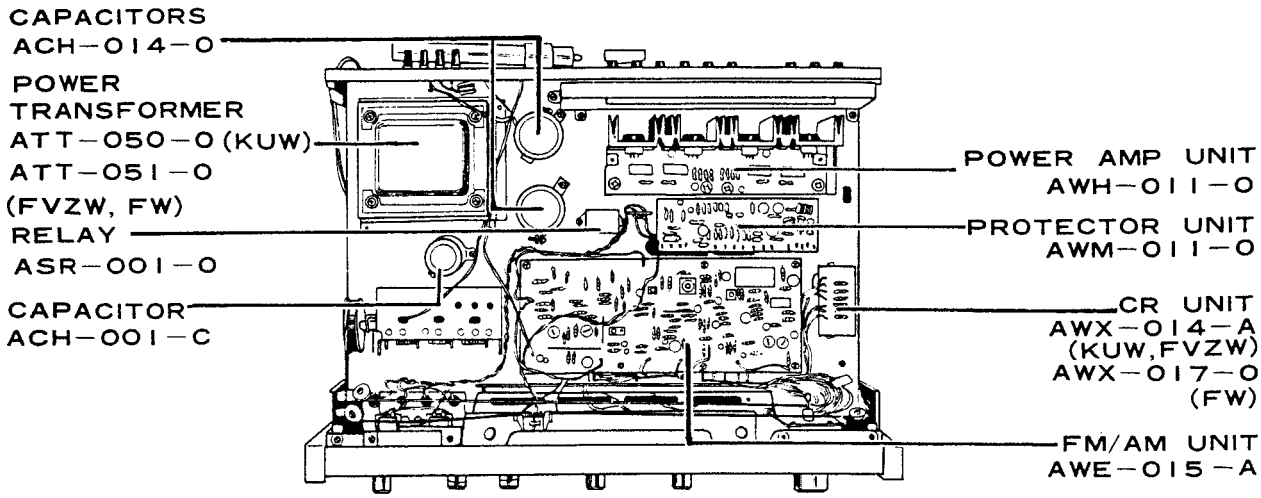
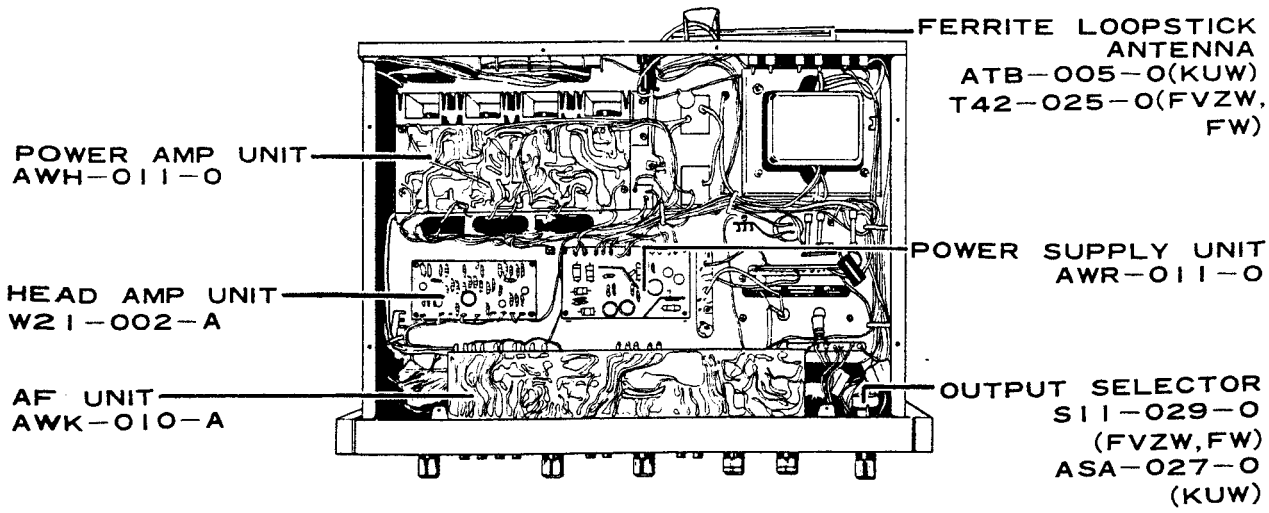


Photo 4

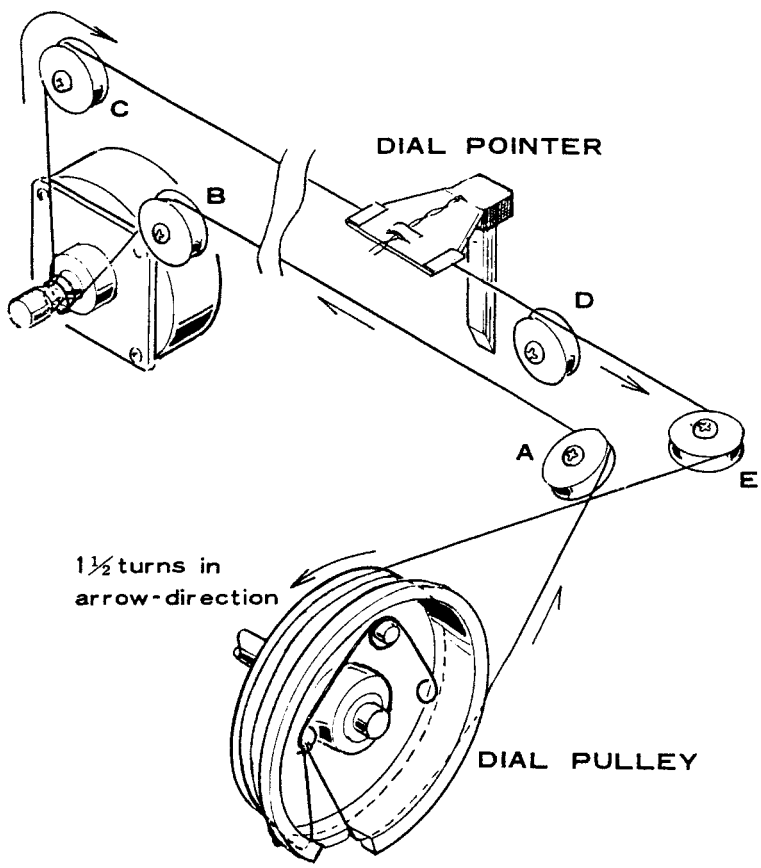
6. PARTS AND PCB LOCATION





7. DIAL CORD STRINGING

1. Set the tuning capacitor to maximum capacitance.
2. Tie one end of the string to dial pulley.
3. Wind the string ½ turns around the tuning pulley.
4. Pull the string around the small pulleys A and B, then wind it 2 turns around the tuning shaft.
5. Lead the string around the small pulleys C and D, then fasten string to the dial pointer.
6. Lead the string around the small pulley E.
7. Finally, tie the end of the string to remaining side of spring on the tuning pulley.
8. Tune receiver to low end. Fasten dial pointer to string so that it indicates low end on dial scale.



8. ALIGNMENT PROCEDURE

The following alignments are required only in very rare cases and should never be attempted without the proper test equipment. Also, only non-metallic tools must be used.

8-1 REQUIRED INSTRUMENTS

- Sweep generator: Center marker frequencies 10.7MHz, 455kHz
- Oscilloscope:
- AC VTVM
- AM/FM signal generator
- FM multiplex signal generator, preferably with RF output

8-2 FM 10.7 MHz ALIGNMENT

1. Confirm +B voltage and current for 12V ±1V which should be 46mA to 50mA at pin 4.
2. Disconnect leads from pins 22 (input) and 24, then connect resistor 2.2kΩ as shunted to pin 24 of FM/AM unit.
3. Connect 10.7MHz sweep generator to pins 22 (hot) and 23 (ground) of FM/AM unit. Set controls as follows:
   Center frequency: 10.7MHz
   Output: 55dB (500μV)
4. Connect vertical scope input to pin 24.
5. Align core of T1 for maximum gain and symmetry to obtain scope pattern as in Fig. 1.
6. Raise generator output gradually to 80dB (10mV), repeat step 5 realignment for each output level, if necessary.
7. Disconnect one side of C23. Disconnect oscilloscope and resistor 2.2kΩ from pin 24. Then reconnect lead to pin 24.
8. Connect scope input to pin 9.
9. Set generator output back to 55dB (500μV).
10. Adjust bottom core of T2 for maximum gain and linearity.
    Adjust top core so that center frequency mark is located on zero axis, as shown in Fig. 2.
11. Reconnect C23.
12. Reconnect input lead to pin 22.

8-3 FM FRONT END ALIGNMENT

1. Confirm +B current (drain 11mA ±4mA).
2. Connect FM signal generator output to 300Ω antenna input.
3. Connect AC VTVM to TAPE REC jack on rear panel.
4. Adjust generator for 400Hz, 100% modulation.
5. Set SELECTOR switch on front panel to FM MONO.
6. Adjust generator frequency and tuning dial to 90MHz.
   During the following adjustments, keep the generator output as low as possible.
7. Adjust L4 core first, the adjust cores of L1, L2, L3 for maximum reading on VTVM and so that tuning meter indicates center position (Fig. 3).
8. Set generator frequency and tuning dial to 106MHz.
9. Adjust trimmer capacitor CT4 first, then adjust CT1, CT2, CT3 for maximum reading on VTVM.
10. Repeat these alignments several times until satisfactory reading is obtained.
11. Finally, adjust T1 core for maximum reading on VTVM.

8-4 FM MPX DECODER ALIGNMENT

1. Set SELECTOR switch on front panel to FM AUTO.
2. Connect RF output of FM multiplex signal generator to 300Ω antenna input.
3. Adjust MPX generator as follows:

Signal Mode	Deviation
L+R	40.5kHz
19kHz (pilot)	7.5kHz

4. Connect AC VTVM to TAPE REC jack on rear panel.
5. Set generator signal mode to L-R (sub), adjust core of T6 (located on FM/AM unit) to obtain maximum reading on VTVM.
6. Set generator signal mode to L. Adjust VR2 (located on FM/AM unit) for minimum crosstalk on R channel TAPE REC output.
7. Set generator signal mode to R. Repeat above adjustment for minimum crosstalk on L channel.

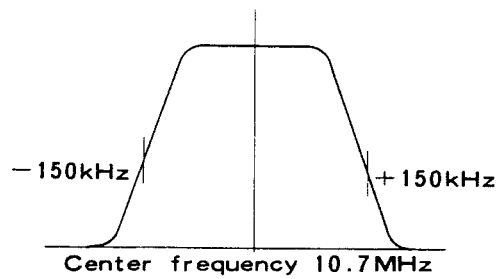


Fig. 1

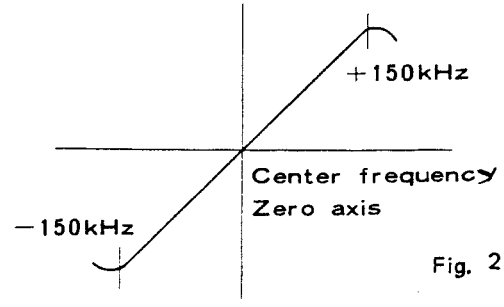


Fig. 2

8-5 MUTING THRESHOLD LEVEL ALIGNMENT

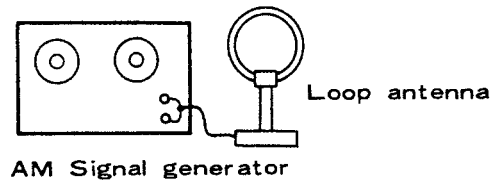
1. Set SELECTOR switch to FM MONO.
2. Turn FM MUTING switch to ON.
3. Connect FM signal generator to 300Ω antenna input.
4. Connect AC VTVM to TAPE REC jack.
5. Set output level of generator to 25dB (20μV), with ±22.5kHz deviation, and 400Hz or 1kHz modulation.
6. Tune receiver accurately to generator frequency.
7. Adjust VR1 on FM/AM unit exactly on the borderline between muting and non-muting.

8-6 AM 455kHz ALIGNMENT

1. Set SELECTOR switch on front panel to AM.
2. Connect 455kHz sweep generator to pin 15. Adjust generator output level to 60dB (1mV).
3. Connect vertical oscilloscope input to either L or R of TAPE REC jack.
4. Set tuning dial to high end position.
5. Adjust cores of CF4 and T5 for maximum gain and symmetrical pattern on oscilloscope.

8-7 AM TRACKING ALIGNMENT

1. Set SELECTOR switch to AM position.
2. For this alignment, bottom plate must be installed.
3. Set signal generator to AM function, 30% modulation with 400Hz.
   Connect loop antenna to generator RF output and place near receiver's ferrite antenna. See Fig. 4.
4. Connect VTVM to TAPE REC jack.
5. Keep generator as low as possible for minimum VTVM reading.
6. Tune generator and receiver to 600kHz. Adjust core of T4 on FM/AM unit for maximum VTVM reading, then adjust core of T3 and ferrite antenna.
7. Re-tune generator and receiver to 1,400kHz.
8. Adjust trimmers of tuming capacitor indicated in Fig. 3 to obtain maximum VTVM reading.



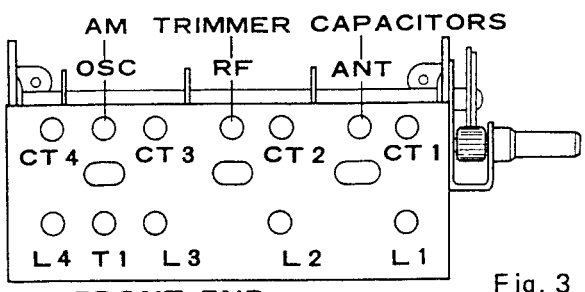


Fig. 3

FM FRONT END

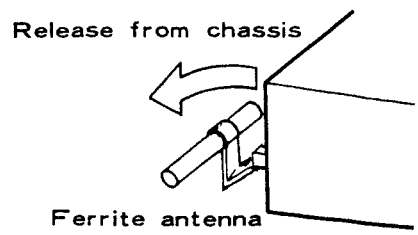
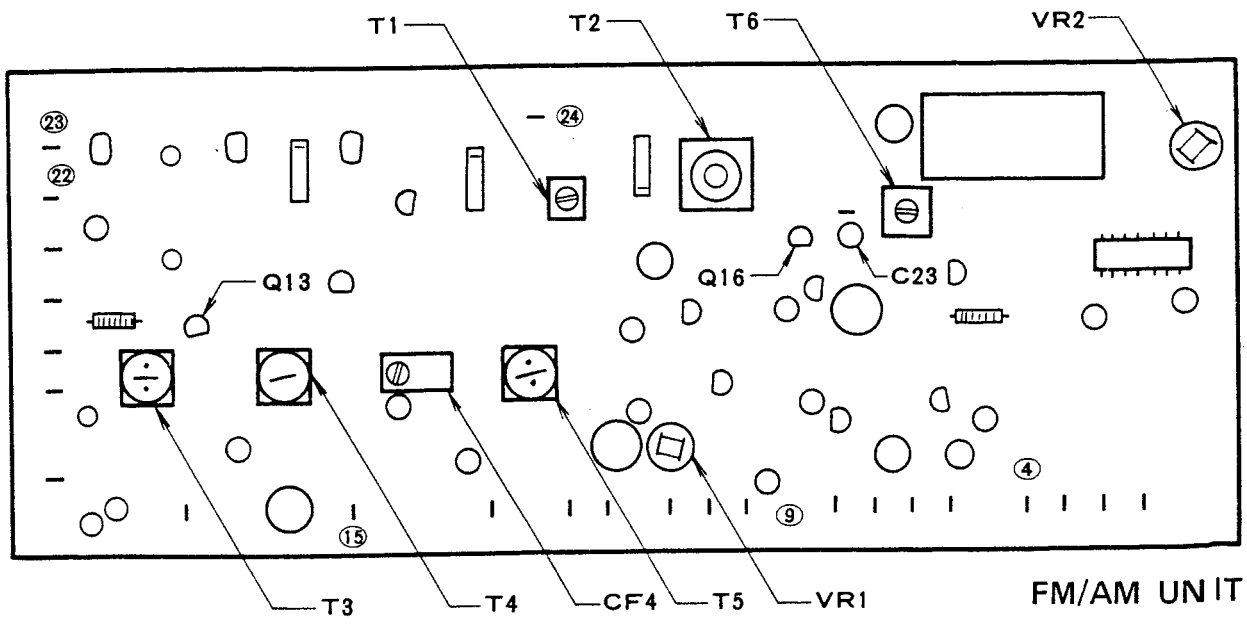
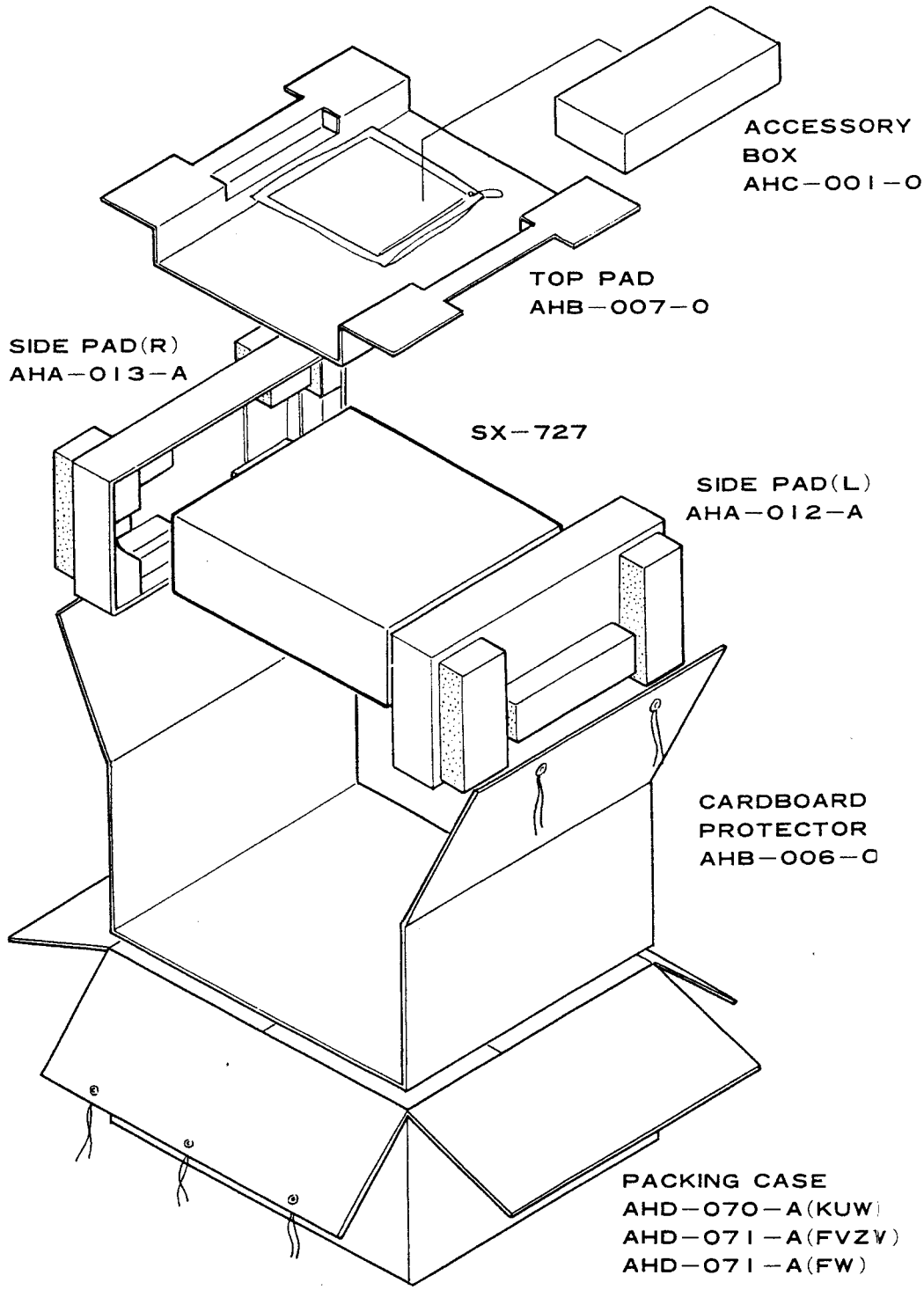


Fig. 4



FM/AM UNIT

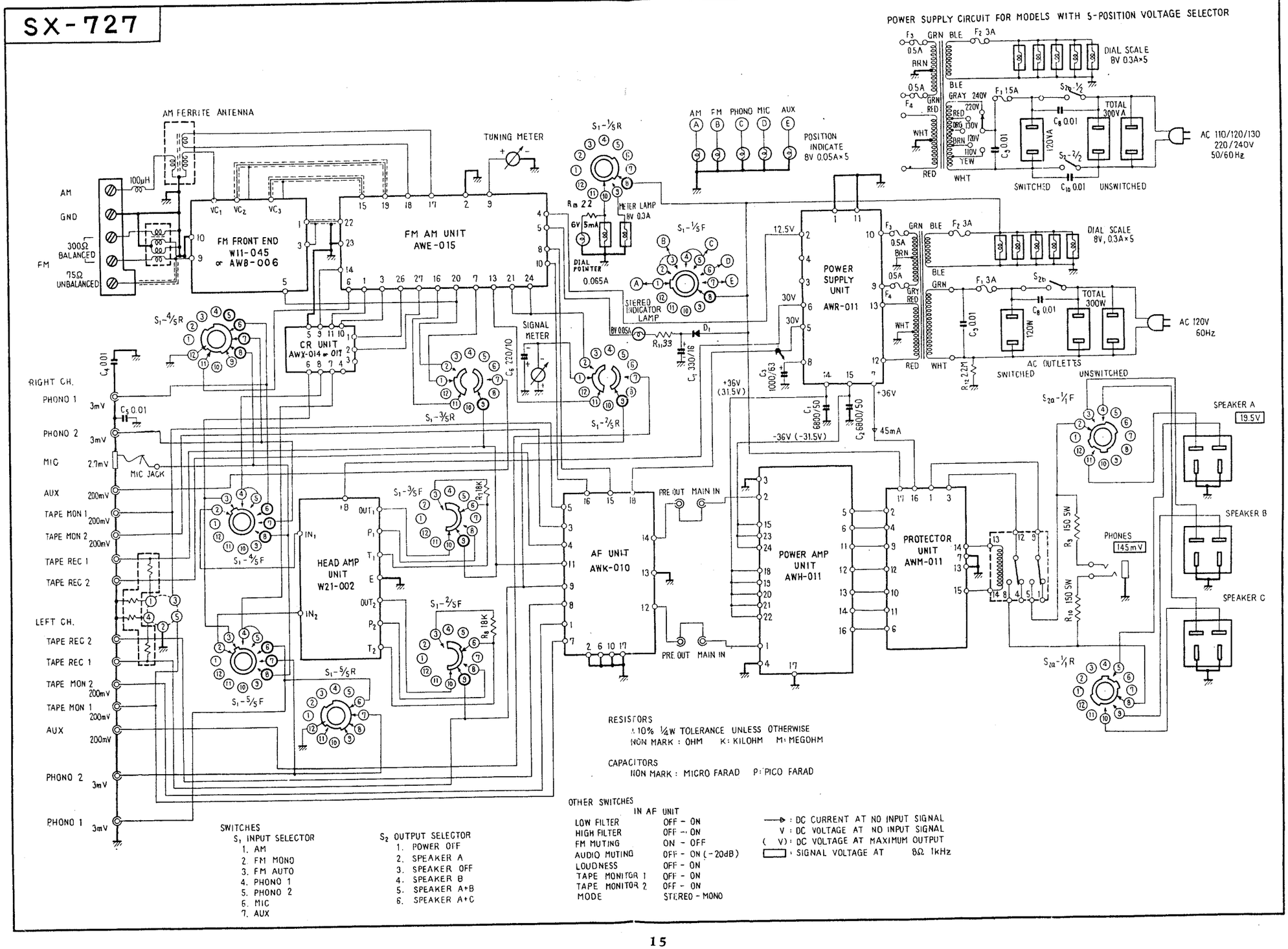
9. PACKING METHOD AND PART NUMBERS



10. SCHEMATIC DIAGRAMS, PCB PATTERNS AND PARTS LIST

10. 1 UNIT CONNECTION DIAGRAM AND MISCELLANEOUS PARTS

SX-727



MISCELLANEOUS PARTS

NOTE

This parts list is for the KUW model, the FVZW or FW model uses some different parts as following pages:

for FVZW model . . . . . page 19
for FW model . . . . . page 21

CAPACITORS

IN μF UNLESS OTHERWISE NOTED, p: μμF.

Symbol	Description	Part No.	
C1	Electrolytic 6800 50V	ACH-014-0	
C2	Electrolytic 6800 50V	ACH-014-0	
C3	Electrolytic 1000 63V	ACH-001-C	
C4	Ceramic 0.01 50V	CKDYF 103Z 50	
C5	Ceramic 0.01 50V	CKDYF 103Z 50	
C6	Electrolytic 220 10V	CEA 221M 10	
C7	Electrolytic 330 16V	CEA 331M 16	
C8	Ceramic 0.01 DC 1.4kV	C43-003-0	
C9	Oil paper 0.01 800V	ACE-001-A	

RESISTORS

IN Ω, ¼W UNLESS OTHERWISE NOTED, k: kΩ, M: MΩ.

Symbol	Description	Part No.	
	Compound part for REC terminal	W52-004-0	
R7	Carbon film 18k	RD¼PS 183J	
R8	Carbon film 18k	RD¼PS 183J	
R9	Wire wound 150 5W	RT5B 151K	
R10	Wire wound 150 5W	RT5B 151K	
R11	Carbon film 33	RD¼PS 330J	
R12	Carbon film 2.2M ½W	RD½PW 225J	
R13	Carbon film 22	RD¼PS 220J	

DIODE

Symbol	Description	Part No.	
D1	SIB01-01		

SWITCHES AND RELAY

Symbol	Description	Part No.	
	Selector switch	ASB-011-A	
	Output selector	S11-029-0	
	Relay	ASR-001-0	

COILS AND TRANSFORMERS

Symbol	Description	Part No.	
	Power transformer	ATT-050-0	
	Ferrite loopstick antenna	ATB-005-0	
	Balun transformer	T22-025-A	
	Choke coil	T24-030-0	

OTHERS

Symbol	Description	Part No.	
	FM front end	W11-045-0	
	FM/AM unit	AWE-015-A	
	Head amp unit	W21-002-A	
	AF unit	AWK-010-A	
	Power amp unit	AWH-011-0	
	Protector unit	AWM-011-0	
	Power supply unit	AWR-011-0	
	CR unit	AWX-014-A	
	Lamp box unit	AWX-016-0	
	Front panel ass'y	ANB-121-0	
	Wooden case	AMM-012-0	
	Dial shaft ass'y	AXA-013-0	
	Dial pulley ass'y	M42-080-A	
	Ferrite loopstick antenna holder ass'y	AXB-001-0	
	Foot	AEC-027-B	
	Pilot lamp for dial scale	E22-017-0	
	Pilot lamp for meter	E22-032-0	
	Pilot lamp for program indicator	AEL-007-0	
	Fuse 3A	E21-021-0	
	Fuse 3A for protection	E21-022-0	
	Fuse 0.5A for protection	E21-019-A	
	Spare AC outlet	AKP-002-0	
	Speaker socket	K72-028-0	
	Headphones jack	K72-026-0	
	Microphone jack	K72-024-0	
	5P connector (DIN)	K93-003-B	
	Pilot lamp (for dial scale) socket	K91-005-A	
	Fuse Holder	AKR-007-0	
	Jumper plug	K71-026-0	
	Screw for grounding	B11-012-A	

Symbol	Description	Part No.	
	Screw to fix wooden case	B11-016-B	
	AC power cord	D11-003-E	
	Speaker plug	K72-007-B	
	Pin plug	K72-015-A	
	Operating instructions	ARB-045-0	
	FM T-type antenna	D52-013-0	
	Packing case	AHD-070-A	
	Side pad (L)	AHA-012-A	
	Side pad (R)	AHA-013-A	
	Cardboard protector	AHB-006-0	
	Top pad	AHB-007-0	
	Accessory box	AHC-001-0	
	Dial scale	AAG-029-0	
	Dial pointer ass'y	AAF-011-A	
	Signal meter	AAW-006-0	
	Tuning meter	AAW-007-0	
	Knob for tuning	AAA-006-0	
	Knob for volume, balance, selector speakers and mode	AAB-007-B	
	Knob for bass and treble (L)	AAB-013-0	
	Knob for bass and treble (R)	AAB-014-0	
	Knob for push switch	AAD-026-0	
	6P input terminal board (PHONO terminal)	AKB-007-0	
	6P input terminal board (TAPE terminal)	AKB-006-0	
	Antenna terminal board	K11-043-C	
	4p ground terminal	K13-047-0	

For FVZW model

CAPACITORS

IN μF UNLESS OTHERWISE NOTED, p: μμF.

Symbol	Description	Part No.	
C1	Electrolytic 6800 50V	ACH-014-0	
C2	Electrolytic 6800 50V	ACH-014-0	
C3	Electrolytic 1000 63V	ACH-001-C	
C4	Ceramic 0.01 50V	CKDYF 103Z 50	
C5	Ceramic 0.01 50V	CKDYF 103Z 50	
C6	Electrolytic 220 10V	CEA 221M 10	
C7	Electrolytic 330 16V	CEA 331M 16	
C8	Ceramic 0.01 DC 1.4kV	C43-003-0	
C9	Ceramic 0.01 DC 1.4kV	C43-003-0	
C10	Ceramic 0.01 DC 1.4kV	C43-003-0	

RESISTORS

IN Ω, ¼W UNLESS OTHERWISE NOTED, k: kΩ, M: MΩ.

Symbol	Description	Part No.	
	Compound part for REC terminal	W52-004-0	
R7	Carbon film 18k	RD¼PS 183J	
R8	Carbon film 18k	RD¼PS 183J	
R9	Wire wound 150 5W	RT5B 151K	
R10	Wire wound 150 5W	RT5B 151K	
R11	Carbon film 33	RD¼PS 330J	
R13	Carbon film 22 ½W	RD½PS 220J	

DIODE

Symbol	Description	Part No.	
D1	SIB01-01		

SWITCHES

Symbol	Description	Part No.	
	Selector switch	ASB-011-A	
	Output selector	S11-029-0	
	Relay	ASR-001-0	

COILS AND TRANSFORMERS

Symbol	Description	Part No.	
	Power transformer	ATT-051-0	
	Ferrite loopstick antenna	T42-025-0	
	Balun transformer	T22-025-A	
	Choke coil	T24-030-0	

OTHERS

Symbol	Description	Part No.	
	FM front end	AWB-006-0	
	FM/AM unit	AWE-015-A	
	Head amp unit	W21-002-A	
	AF unit	AWK-010-A	
	Power amp unit	AWH-011-0	
	Protector unit	AWM-011-0	
	Power supply unit	AWR-011-0	
	CR unit	AWX-014-A	
	Lamp box unit	AWX-016-0	
	Front panel ass'y	ANB-121-0	
	Wooden case	AMM-012-0	
	Dial shaft ass'y	AXA-013-0	
	Dial pulley ass'y	M42-080-A	
	Ferrite loopstick antenna holder ass'y	AXB-001-0	
	Foot	AEC-027-B	
	Pilot lamp for dial scale	E22-017-0	
	Pilot lamp for meter	E22-032-0	
	Pilot lamp for program indicator	AEL-007-0	
	Fuse 1.5A	E21-012-0	
	Fuse 3A for protection	E21-022-0	
	Fuse 0.5A for protection	E21-019-A	
	Spare AC outlet	AKP-002-0	
	Speaker socket	K72-028-0	
	Headphones jack	K72-026-0	
	Microphone jack	K72-024-0	
	5P connector (DIN)	K93-003-B	
	Pilot lamp (for dial scale) socket	K91-005-A	
	Line voltage selector	AKR-001-0	
	Jumper plug	K71-026-0	
	Screw for grounding	B11-012-A	

Symbol	Description	Part No.	
	Screw to fix wooden case	B11-016-B	
	AC power cord	D11-002-B	
	Speaker plug	K72-007-B	
	Pin plug	K72-015-A	
	Fuse 3A	E21-006-0	
	Operating instructions	ARB-045-0	
	FM T-type antenna	D52-013-0	
	Packing case	AHD-071-A	
	Side pad (L)	AHA-012-A	
	Side pad (R)	AHA-013-A	
	Cardboard protector	AHB-006-0	
	Top pad	AHB-007-0	
	Accessory box	AHC-001-0	
	Dial scale	AAG-029-0	
	Dial pointer ass'y	AAF-011-A	
	Signal meter	AAW-006-0	
	Tuning meter	AAW-007-0	
	Knob for tuning	AAA-006-0	
	Knob for volume, balance, selector, speakers and mode	AAB-007-B	
	Knob for bass and treble (L)	AAB-013-0	
	Knob for bass and treble (R)	AAB-014-0	
	Knob for push switch	AAD-026-0	
	6P input terminal board (PHONO terminal)	AKB-007-0	
	6P input terminal board (TAPE terminal)	AKB-006-0	
	Antenna terminal board	K11-043-C	
	4P ground terminal	K13-047-0	

For FW model

CAPACITORS

IN μF UNLESS OTHERWISE NOTED, p: μμF.

Symbol	Description			Part No.			
C1	Electrolytic	6800	50V	ACH-014-0			
C2	Electrolytic	6800	50V	ACH-014-0			
C3	Electrolytic	1000	63V	ACH-001-C			
C4	Ceramic	0.01	50V	CKDYF	103Z	50	
C5	Ceramic	0.01	50V	CKDYF	103Z	50	
C6	Electrolytic	220	10V	CEA	221P	10	
C7	Electrolytic	330	16V	CEA	331P	16	
C8	Ceramic	0.01	DC 1.4kV	C43-003-0			
C9	Ceramic	0.01	DC 1.4kV	C43-003-0			
C10	Ceramic	0.01	DC 1.4kV	C43-003-0			

RESISTORS

IN Ω, ¼W UNLESS OTHERWISE NOTED. k: kΩ, M: MΩ.

Symbol	Description			Part No.			
	Compound part for REC terminal			W52-004-0			
R7	Carbon film	18k		RD¼PS	183J		
R8	Carbon film	18k		RD¼PS	183J		
R9	Wire wound	150	5W	RT5B	151K		
R10	Wire wound	150	5W	RT5B	151K		
R11	Carbon film	33		RD¼PS	330J		
R13	Carbon film	22	½W	RD½PS	220J		

DIODE

Symbol	Description	Part No.	
D1	SIB01-01		

SWITCHES

Symbol	Description	Part No.	
	Selector switch	ASB-011-A	
	Output selector	S11-029-0	
	Relay	ASR-001-0	

COILS AND TRANSFORMERS

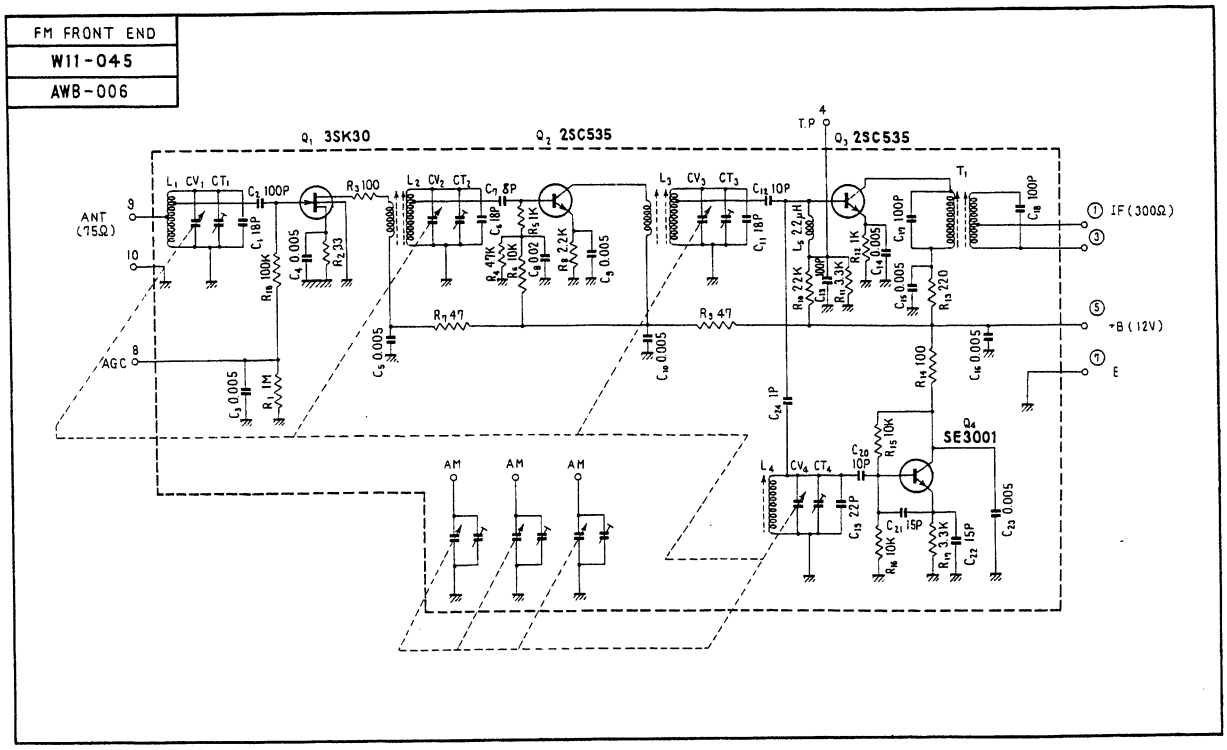
Symbol	Description	Part No.	
	Power transformer	ATT-051-0	
	Ferrite loopstick antenna	T42-025-0	
	Balun transformer	T22-025-A	
	Choke coil	T24-030-0	

OTHERS

Symbol	Description	Part No.	
	FM front end	W11-045-0	
	FM/AM unit	AWE-015-A	
	Head amp unit	W21-002-A	
	AF unit	AWK-010-A	
	Power amp unit	AWH-011-0	
	Protector unit	AWM-011-0	
	Power supply unit	AWR-011-0	
	CR unit	AWX-017-0	
	Lamp box unit	AWX-016-0	
	Front panel ass'y	ANB-121-0	
	Wooden case	AMM-012-0	
	Dial shaft ass'y	AXA-013-0	
	Dial pulley ass'y	M42-080-A	
	Ferrite loopstick antenna holder ass'y	AXB-001-0	
	Foot	AEC-027-B	
	Pilot lamp for dial scale	E22-017-0	
	Pilot lamp for meter	E22-032-0	
	Pilot lamp for program indicator	AEL-007-0	
	Fuse 1.5A	E21-012-0	
	Fuse 3A for protection	E21-022-0	
	Fuse 0.5A for protection	E21-019-A	
	Spare AC outlet	AKP-002-0	
	Speaker socket	K72-028-0	
	Headphones jack	K72-026-0	
	Microphone jack	K72-024-0	
	5P connector (DIN)	K93-003-B	
	Pilot lamp (for dial scale) socket	K91-005-A	
	Line voltage selector	AKR-001-0	
	Jumper plug	K71-026-0	
	Screw for grounding	B11-012-A	

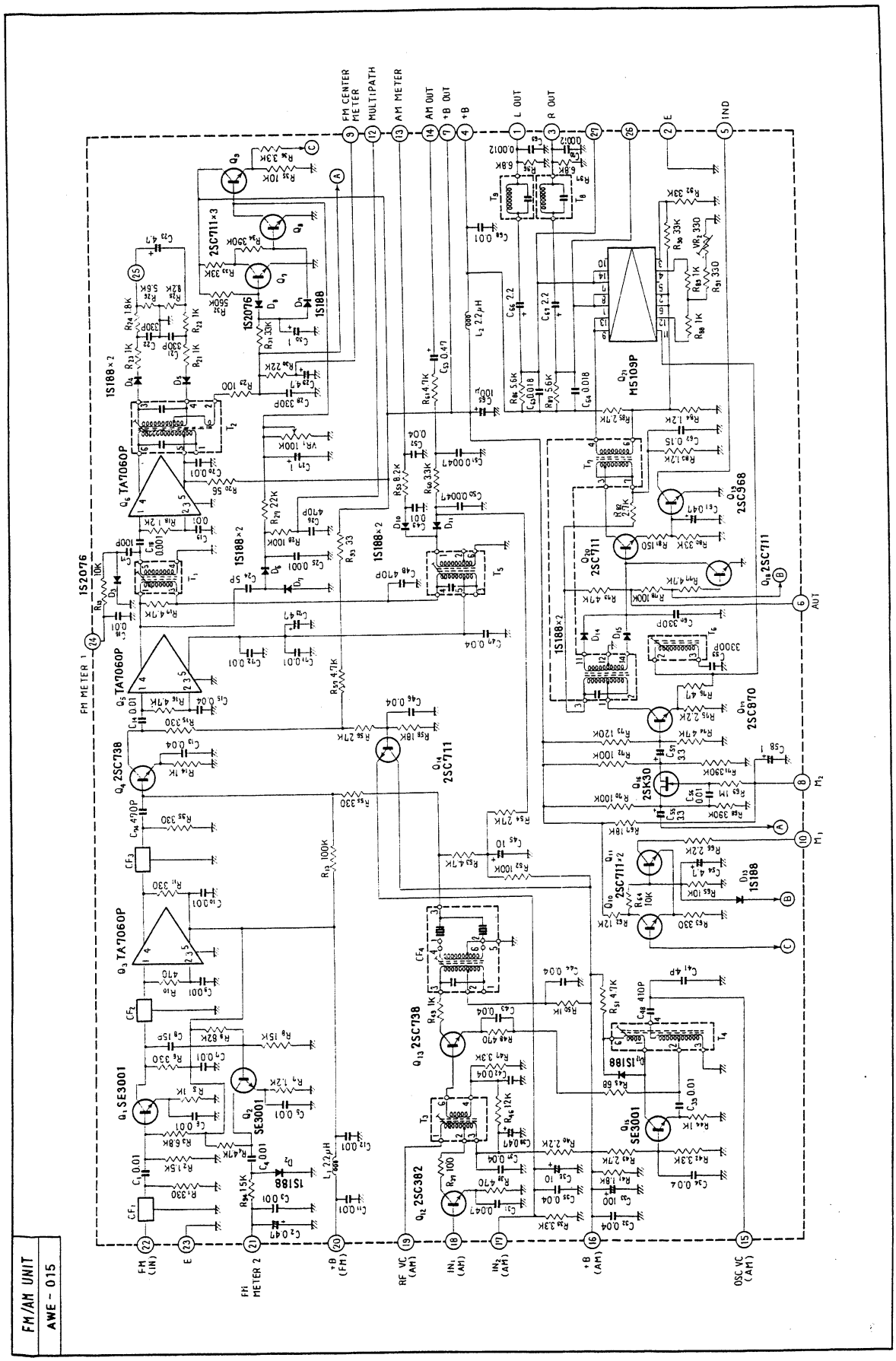
Symbol	Description	Part No.	
	Screw to fix wooden case	B11-016-B	
	AC power cord	D11-002-B	
	Speaker plug	K72-007-B	
	Pin plug	K72-015-A	
	Fuse 3A	E21-006-0	
	Operating instructions	ARB-045-0	
	FM T-type antenna	D52-013-0	
	Packing case	AHD-071-A	
	Side pad (L)	AHA-012-A	
	Side pad (R)	AHA-013-A	
	Cardboard protector	AHB-006-0	
	Top pad	AHB-007-0	
	Accessory box	AHC-001-0	
	Dial scale	AAG-029-0	
	Dial pointer ass'y	AAF-011-A	
	Signal meter	AAW-006-0	
	Tuning meter	AAW-007-0	
	Knob for tuning	AAA-006-0	
	Knob for volume, balance, selector, speakers and mode	AAB-007-B	
	Knob for bass and treble (L)	AAB-013-0	
	Knob for bass and treble (R)	AAB-014-0	
	Knob for push switch	AAD-026-0	
	6P input terminal board (PHONO terminal)	AKB-007-0	
	6P input terminal board (TAPE terminal)	AKB-006-0	
	Antenna terminal board	K11-043-C	
	4P ground terminal	K13-047-0	

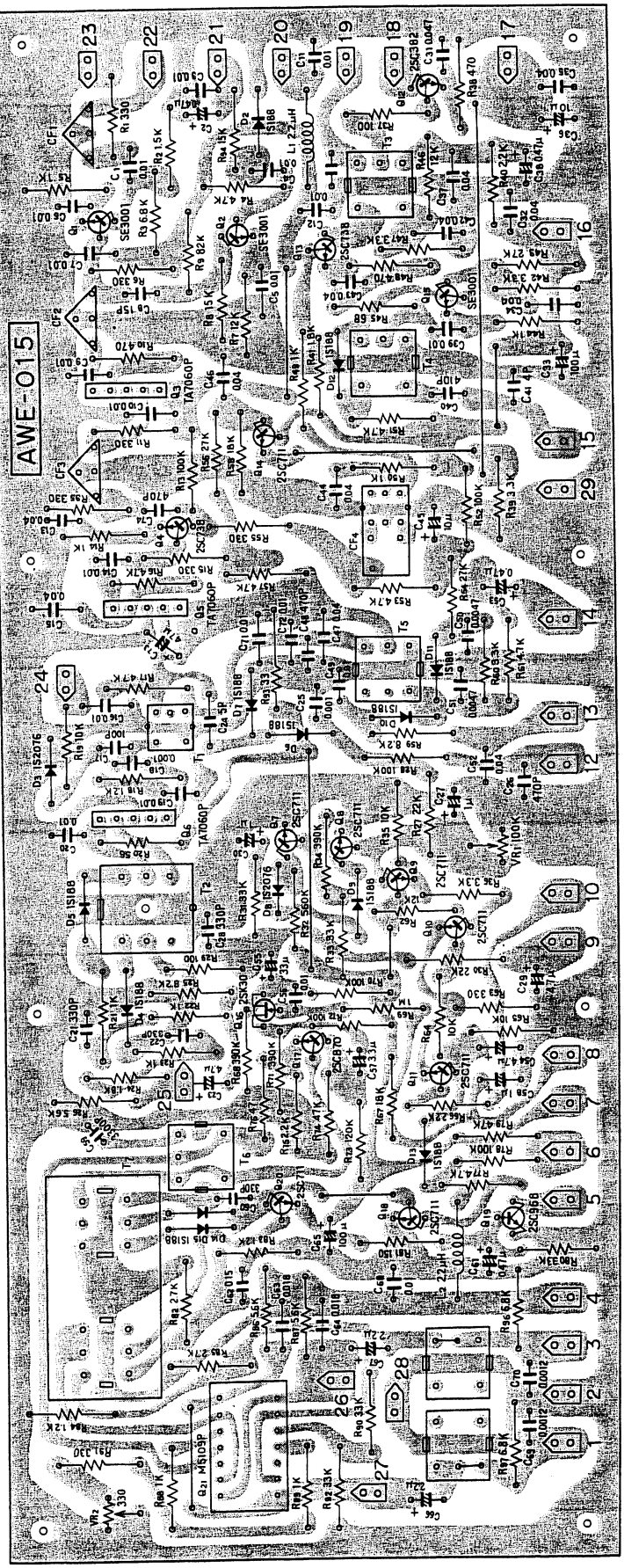
10.3 FM FRONT END (W11-045)(AWB-006)



NOTE: AWB-006 is FTZ-approved and W11-045 is applied to any place except FTZ-approved one.

10.4 FM/AM UNIT(AWE-015)




AWE-015

PARTS LIST OF FM/AM UNIT

CAPACITORS

Symbol	Description			Part No.			
C1	Ceramic	0.01	50V	CKDYF	103Z	50	
C2	Electrolytic	0.47	50V	CEA	R47P	50	
C3	Ceramic	0.01	50V	CKDYF	103Z	50	
C4	Ceramic	0.01	50V	CKDYF	103Z	50	
C5	Ceramic	0.01	50V	CKDYF	103Z	50	
C6	Ceramic	0.01	50V	CKDYF	103Z	50	
C7	Ceramic	0.01	50V	CKDYB	103K	50	
C8	Ceramic	15p	50V	CCDSL	150K	50	
C9	Ceramic	0.01	50V	CKDYF	103Z	50	
C10	Ceramic	0.01	50V	CKDYB	103K	50	
C11	Ceramic	0.01	50V	CKDYF	103Z	50	
C12	Ceramic	0.01	50V	CKDYB	103K	50	
C13	Ceramic	0.04	50V	CKDYF	403Z	50	
C14	Ceramic	0.01	50V	CKDYF	103Z	50	
C15	Ceramic	0.04	50V	CKDYF	403Z	50	
C16	Ceramic	0.01	50V	CKDYF	103Z	50	
C17	Ceramic	100p	50V	CCDSL	101K	50	
C18	Ceramic	0.001	50V	CKDYB	102K	50	
C19	Ceramic	0.01	50V	CKDYF	103Z	50	
C20	Ceramic	0.01	50V	CKDYF	103Z	50	
C21	Ceramic	330p	50V	CKDYB	331K	50	
C22	Ceramic	330p	50V	CKDYB	331K	50	
C23	Electrolytic	4.7	25V	CEA	4R7P	25	
C24	Ceramic	5p	50V	CCDSL	050D	50	
C25	Ceramic	0.001	50V	CKDYB	102K	50	

Symbol	Description			Part No.			
C26	Ceramic	470p	50V	CKDYB	471K	50	
C27	Electrolytic	1	50V	CEA	010P	50	
C28	Ceramic	330p	50V	CKDYB	331K	50	
C29	Electrolytic	4.7	25V	CEA	4R7P	25	
C30	Electrolytic	1	50V	CEA	010P	50	
C31	Ceramic	0.047	25V	CKDBC	473Z	25	
C32	Ceramic	0.04	50V	CKDYF	403Z	50	
C33	Electrolytic	100	16V	CEA	101P	16	
C34	Ceramic	0.04	50V	CKDYF	403Z	50	
C35	Ceramic	0.04	50V	CKDYF	403Z	50	
C36	Electrolytic	10	16V	CEA	100P	16	
C37	Ceramic	0.04	50V	CKDYF	403Z	50	
C38	Electrolytic	0.47	50V	CEA	R47P	50	
C39	Mylar	0.01	50V	CQMA	103K	50	
C40	Styrol	410p	50V	CQSA	411K	50	
C41	Ceramic	4p	50V	CCDSL	040D	50	
C42	Ceramic	0.04	50V	CKDYF	403Z	50	
C43	Ceramic	0.04	50V	CKDYF	403Z	50	
C44	Ceramic	0.04	50V	CKDYF	403Z	50	
C45	Electrolytic	10	16V	CEA	100P	16	
C46	Ceramic	0.04	50V	CKDYF	403Z	50	
C47	Ceramic	0.04	50V	CKDYF	403Z	50	
C48	Ceramic	470p	50V	CKDYB	471K	50	
C49	Ceramic	0.01	50V	CKDYF	103Z	50	
C50	Mylar	0.0047	50V	CQMA	472K	50	
C51	Mylar	0.0047	50V	CQMA	472K	50	
C52	Ceramic	0.04	50V	CKDYF	403Z	50	
C53	Electrolytic	0.47	25V	CSSA	R47X	25	
C54	Electrolytic	4.7	25V	CEA	4R7P	25	
C55	Electrolytic	3.3	16V	CSSA	3R3M	16	

Symbol	Description			Part No.			
C56	Mylar	0.01	50V	CQMA	103K	50	
C57	Electrolytic	3.3	16V	CSSA	3R3M	16	
C58	Electrolytic	1	50V	CEA	010P	50	
C59	Styrol	0.0033	50V	C15-011-A			
C60	Ceramic	330p	50V	CKDYB	331K	50	
C61	Electrolytic	0.47	50V	CEA	R47P	50	
C62	Mylar	0.15	50V	CQMA	154K	50	
C63	Mylar	0.018	50V	CQMA	183K	50	
C64	Mylar	0.018	50V	CQMA	183K	50	
C65	Electrolytic	100	16V	CEA	101P	16	
C66	Electrolytic	2.2	16V	CSSA	2R2M	16	
C67	Electrolytic	2.2	16V	CSSA	2R2M	16	
C68	Ceramic	0.01	50V	CKDYF	103Z	50	
C69	Mylar	0.0012	50V	CQMA	122K	50	
C70	Mylar	0.0012	50V	CQMA	122K	50	
C71	Ceramic	0.01	50V	CKDYB	103K	50	
C72	Ceramic	0.01	50V	CKDYB	103K	50	
C73	Electrolytic	47	16V	CEA	470P	16	
C74	Ceramic	470p	50V	CKDYB	471K	50	

RESISTORS

Symbol	Description		Part No.		
VR1	Semi-fixed	100k-B	C92-047-0		
VR2	Semi-fixed	330-B	C92-065-A		
R1	Carbon film	330	RD¼PS	331J	
R2	Carbon film	1.5k	RD¼PS	152J	
R3	Carbon film	6.8k	RD¼PS	682J	
R4	Carbon film	4.7k	RD¼PS	472J	
R5	Carbon film	1k	RD¼PS	102J	
R6	Carbon film	330	RD¼PS	331J	
R7	Carbon film	1.2k	RD¼PS	122J	
R8	Carbon film	15k	RD¼PS	153J	
R9	Carbon film	82k	RD¼PS	823J	
R10	Carbon film	470	RD¼PS	471J	
R11	Carbon film	330	RD¼PS	331J	
R13	Carbon film	100k	RD¼PS	104J	
R14	Carbon film	1k	RD¼PS	102J	
R15	Carbon film	330	RD¼PS	331J	
R16	Carbon film	4.7k	RD¼PS	472J	
R17	Carbon film	4.7k	RD¼PS	472J	
R18	Carbon film	1.2k	RD¼PS	122J	
R19	Carbon film	10k	RD¼PS	103J	
R20	Carbon film	56	RD¼PS	560J	
R21	Carbon film	1k	RD¼PS	102J	
R22	Carbon film	1k	RD¼PS	102J	
R23	Carbon film	1k	RD¼PS	102J	
R24	Carbon film	1.8k	RD¼PS	182J	
R25	Carbon film	8.2k	RD¼PS	822J	
R26	Carbon film	5.6k	RD¼PS	562J	
R27	Carbon film	22k	RD¼PS	223J	
R28	Carbon film	100k	RD¼PS	104J	
R29	Carbon film	100	RD¼PS	101J	
R30	Carbon film	22k	RD¼PS	223J	
R31	Carbon film	33k	RD¼PS	333J	
R32	Carbon film	560k	RD¼PS	564J	
R33	Carbon film	33k	RD¼PS	333J	
R34	Carbon film	390k	RD¼PS	394J	
R35	Carbon film	10k	RD¼PS	103J	
R36	Carbon film	3.3k	RD¼PS	332J	

Symbol	Description		Part No.	
R37	Carbon film	100	RD¼PS 101J	
R38	Carbon film	470	RD¼PS 471J	
R39	Carbon film	3.3k	RD¼PS 332J	
R40	Carbon film	2.2k	RD¼PS 222J	
R41	Carbon film	1.8k	RD¼PS 182J	
R42	Carbon film	3.3k	RD¼PS 332J	
R43	Carbon film	27k	RD¼PS 273J	
R44	Carbon film	1k	RD¼PS 102J	
R45	Carbon film	68	RD¼PS 680J	
R46	Carbon film	12k	RD¼PS 123J	
R47	Carbon film	3.3k	RD¼PS 332J	
R48	Carbon film	470	RD¼PS 471J	
R49	Carbon film	1k	RD¼PS 102J	
R50	Carbon film	1k	RD¼PS 102J	
R51	Carbon film	4.7k	RD¼PS 472J	
R52	Carbon film	100k	RD¼PS 104J	
R53	Carbon film	4.7k	RD¼PS 472J	
R54	Carbon film	27k	RD¼PS 273J	
R55	Carbon film	330	RD¼PS 331J	
R56	Carbon film	27k	RD¼PS 273J	
R57	Carbon film	4.7k	RD¼PS 472J	
R58	Carbon film	18k	RD¼PS 183J	
R59	Carbon film	8.2k	RD¼PS 822J	
R60	Carbon film	3.3k	RD¼PS 332J	
R61	Carbon film	4.7k	RD¼PS 472J	
R62	Carbon film	12k	RD¼PS 123J	
R63	Carbon film	330	RD¼PS 331J	
R64	Carbon film	10k	RD¼PS 103J	
R65	Carbon film	10k	RD¼PS 103J	
R66	Carbon film	2.2k	RD¼PS 222J	

Symbol	Description		Part No.	
R67	Carbon film	18k	RD¼PS 183J	
R68	Carbon film	390k	RD¼PS 394J	
R69	Carbon film	1M	RD¼PS 105J	
R70	Carbon film	100k	RD¼PS 104J	
R71	Carbon film	390k	RD¼PS 394J	
R72	Carbon film	100k	RD¼PS 104J	
R73	Carbon film	120k	RD¼PS 124J	
R74	Carbon film	47k	RD¼PS 473J	
R75	Carbon film	2.2k	RD¼PS 222J	
R76	Carbon film	47	RD¼PS 470J	
R77	Carbon film	4.7k	RD¼PS 472J	
R78	Carbon film	100k	RD¼PS 104J	
R79	Carbon film	47k	RD¼PS 473J	
R80	Carbon film	33k	RD¼PS 333J	
R81	Carbon film	150	RD¼PS 151J	
R82	Carbon film	2.7k	RD¼PS 272J	
R83	Carbon film	1.2k	RD¼PS 122J	
R84	Carbon film	1.2k	RD¼PS 122J	
R85	Carbon film	2.7k	RD¼PS 272J	
R86	Carbon film	5.6k	RD¼PS 562J	
R87	Carbon film	5.6k	RD¼PS 562J	
R88	Carbon film	1k	RD¼PS 102J	
R89	Carbon film	1k	RD¼PS 102J	
R90	Carbon film	33k	RD¼PS 333J	
R91	Carbon film	330	RD¼PS 331J	
R92	Carbon film	33k	RD¼PS 333J	
R93	Carbon film	33	RD¼PS 330J	
R94	Carbon film	15k	RD¼PS 153J	
R95	Carbon film	330	RD¼PS 331J	
R96	Carbon film	6.8k	RD¼PS 682J	
R97	Carbon film	6.8k	RD¼PS 682J	

SEMICONDUCTORS

Symbol	Description	Part No.	
Q1	SE3001 Transistor		
Q2	SE3001 Transistor		
Q3	TA7060P-R or W IC		
Q4	2SC738-P Transistor		
Q5	TA7060P-W IC		
Q6	TA7060P-W IC		
Q7	2SC711-F or E Transistor		
Q8	2SC711-F or E Transistor		
Q9	2SC711-F or E Transistor		
Q10	2SC711-F or E Transistor		
Q11	2SC711-F or E Transistor		
Q12	2SC382 Transistor		
Q13	2SC738-P Transistor		
Q14	2SC711-F Transistor		
Q15	SE3001 Transistor		
Q16	2SK30-Y or GR FET		
Q17	2SC870-F or E Transistor		
Q18	2SC711-F or E Transistor		
Q19	2SC968-Y Transistor		
Q20	2SC711-F or E Transistor		
Q21	M5109P IC		
D2	1S188 FM-1 Diode		
D3	1S2076 Diode		
D4	1S188 FM-1 Diode		
D5	1S188 FM-1 Diode		
D6	1S188 FM-1 Diode		
D7	1S188 FM-1 Diode		
D8	1S2076 Diode		
D9	1S2076 Diode		
D10	1S2076 Diode		
D11	1S188 FM-1 Diode		
D12	1S188 FM-1 Diode		
D13	1S188 FM-1 Diode		
D14	1S188 FM-1 Diode		
D15	1S188 FM-1 Diode		

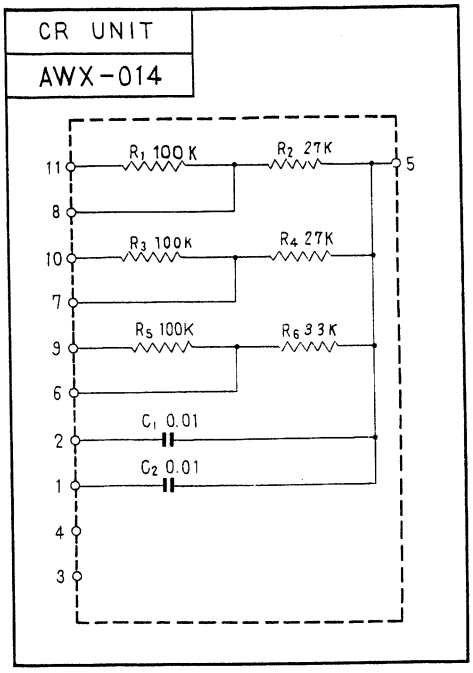
FILTERS

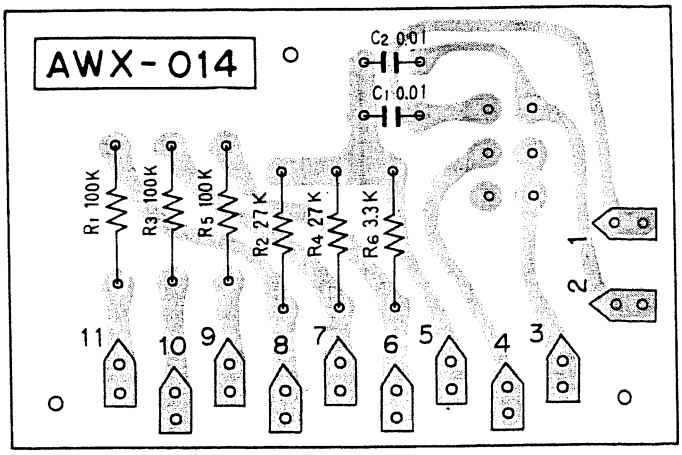
Symbol	Description	Part No.	
CF1	FM Ceramic filter	ATF-003-0	
CF2	FM Ceramic filter	ATF-001-0	
CF3	FM Ceramic filter	ATF-001-0	
CF4	AM Ceramic filter	ATF-002-A	

COILS AND TRANSFORMERS

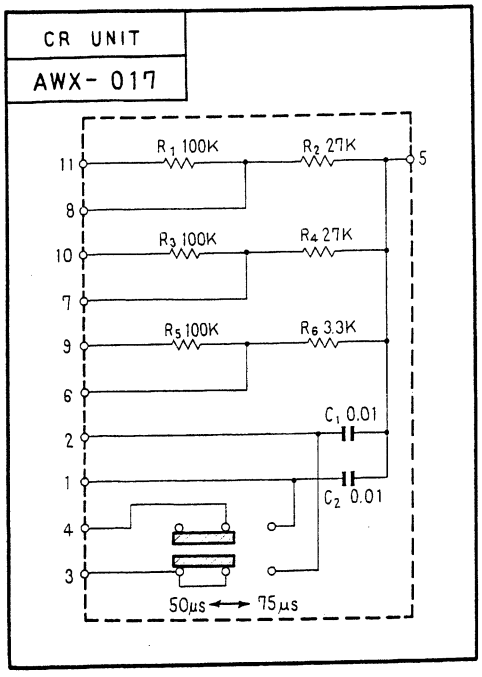
Symbol	Description	Part No.	
T1	Matching transformer	ATE-002-0	
T2	FM Det. transformer	T74-003-A	
T3	AM RF transformer	ATB-003-A	
T4	AM OSC transformer	ATB-004-B	
T5	AM Det. transformer	ATE-003-B	
T6	19kHz coil	T75-023-B	
T7	MPX transformer	T75-026-0	
T8	38kHz leak filter	ATM-004-0	
T9	38kHz leak filter	ATM-004-0	
L1	RF choke coil	T24-028-A	
L2	RF choke coil	T24-028-A	

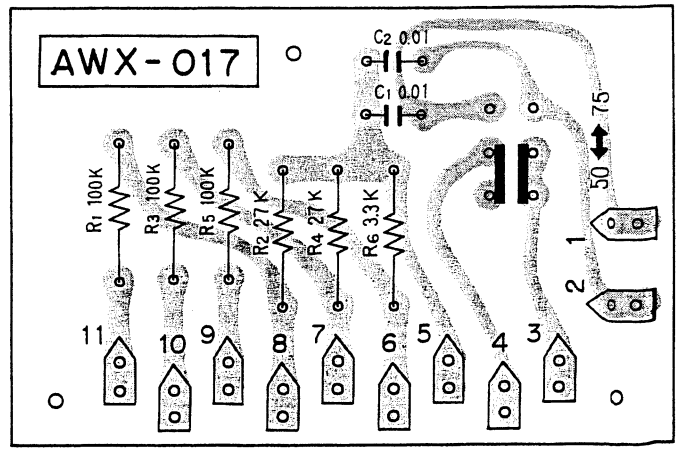
10.5 CR UNIT(AWX-014)(AWX-017)





For FW moel





PARTS LIST OF CR UNIT

CAPACITORS

Symbol	Description	Part No.	
C1	Mylar 0.01 50V	CQMA 103K 50	
C2	Mylar 0.01 50V	CQMA 103K 50	

RESISTORS

Symbol	Description	Part No.	
R1	Carbon film 100k	RD¼PS 104J	
R2	Carbon film 27k	RD¼PS 273J	
R3	Carbon film 100k	RD¼PS 104J	
R4	Carbon film 27k	RD¼PS 273J	
R5	Carbon film 100k	RD¼PS 104J	
R6	Carbon film 3.3k	RD¼PS 332J	

SWITCH

Symbol	Description	Part No.	
	Slide switch	ASM-002-0	

PARTS LIST OF CR UNIT

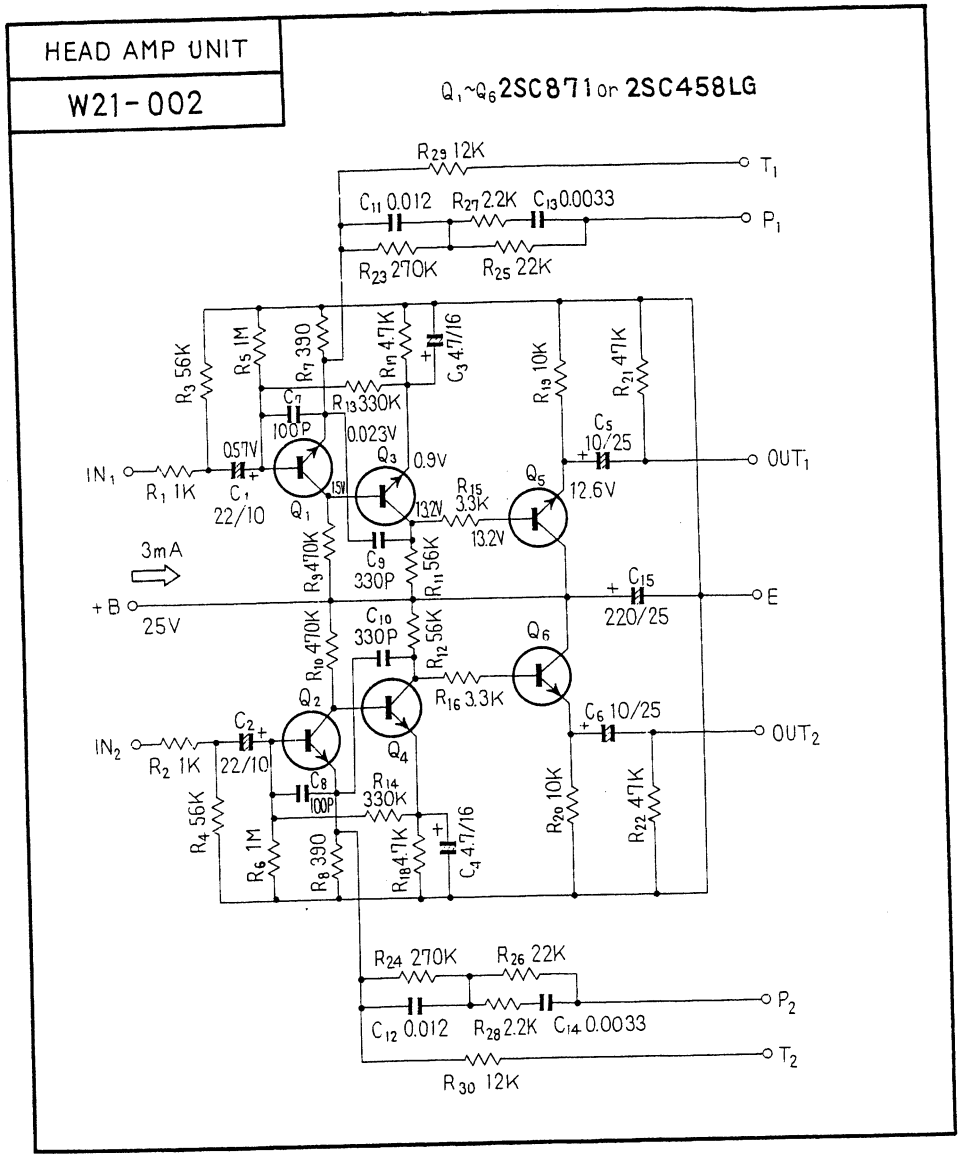
CAPACITORS

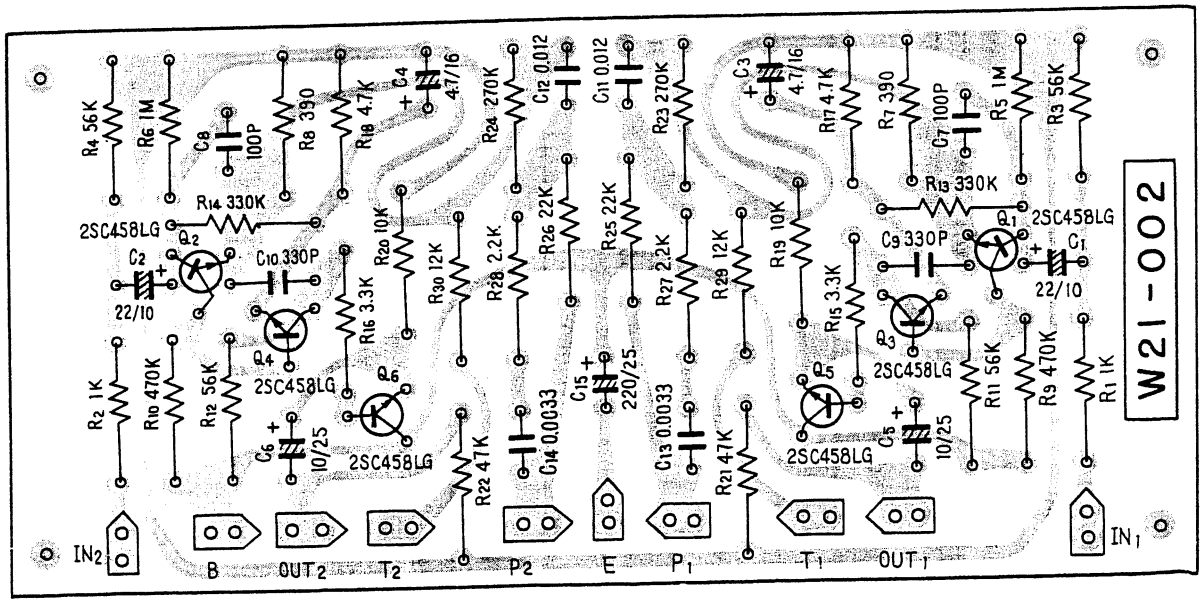
Symbol	Description	Part No.	
C1	Mylar 0.01 50V	CQMA 103K 50	
C2	Mylar 0.01 50V	CQMA 103K 50	

RESISTORS

Symbol	Description	Part No.	
R1	Carbon film 100k	RD¼PS 104J	
R2	Carbon film 27k	RD¼PS 273J	
R3	Carbon film 100k	RD¼PS 104J	
R4	Carbon film 27k	RD¼PS 273J	
R5	Carbon film 100k	RD¼PS 104J	
R6	Carbon film 3.3k	RD¼PS 332J	

10.6 HEAD AMP UNIT (W21-002)





PARTS LIST OF HEAD AMP UNIT

CAPACITORS

Symbol	Description			Part No.			
C1	Electrolytic	22	10V	CEA	220P	10	
C2	Electrolytic	22	10V	CEA	220P	10	
C3	Electrolytic	4.7	16V	CEA	4R7P	16	
C4	Electrolytic	4.7	16V	CEA	4R7P	16	
C5	Electrolytic	10	25V	CEA	100P	25	
C6	Electrolytic	10	25V	CEA	100P	25	
C7	Ceramic	100p	50V	CCDSL	101K	50	
C8	Ceramic	100p	50V	CCDSL	101K	50	
C9	Ceramic	330p	50V	CCDSL	331K	50	
C10	Ceramic	330p	50V	CCDSL	331K	50	
C11	Mylar	0.012	50V	CQMA	123K	50	
C12	Mylar	0.01	50V	CQMA	103K	50	
C13	Mylar	0.0033	50V	CQMA	332K	50	
C14	Mylar	0.0033	50V	CQMA	332K	50	
C15	Electrolytic	220	25V	CEA	221P	25	

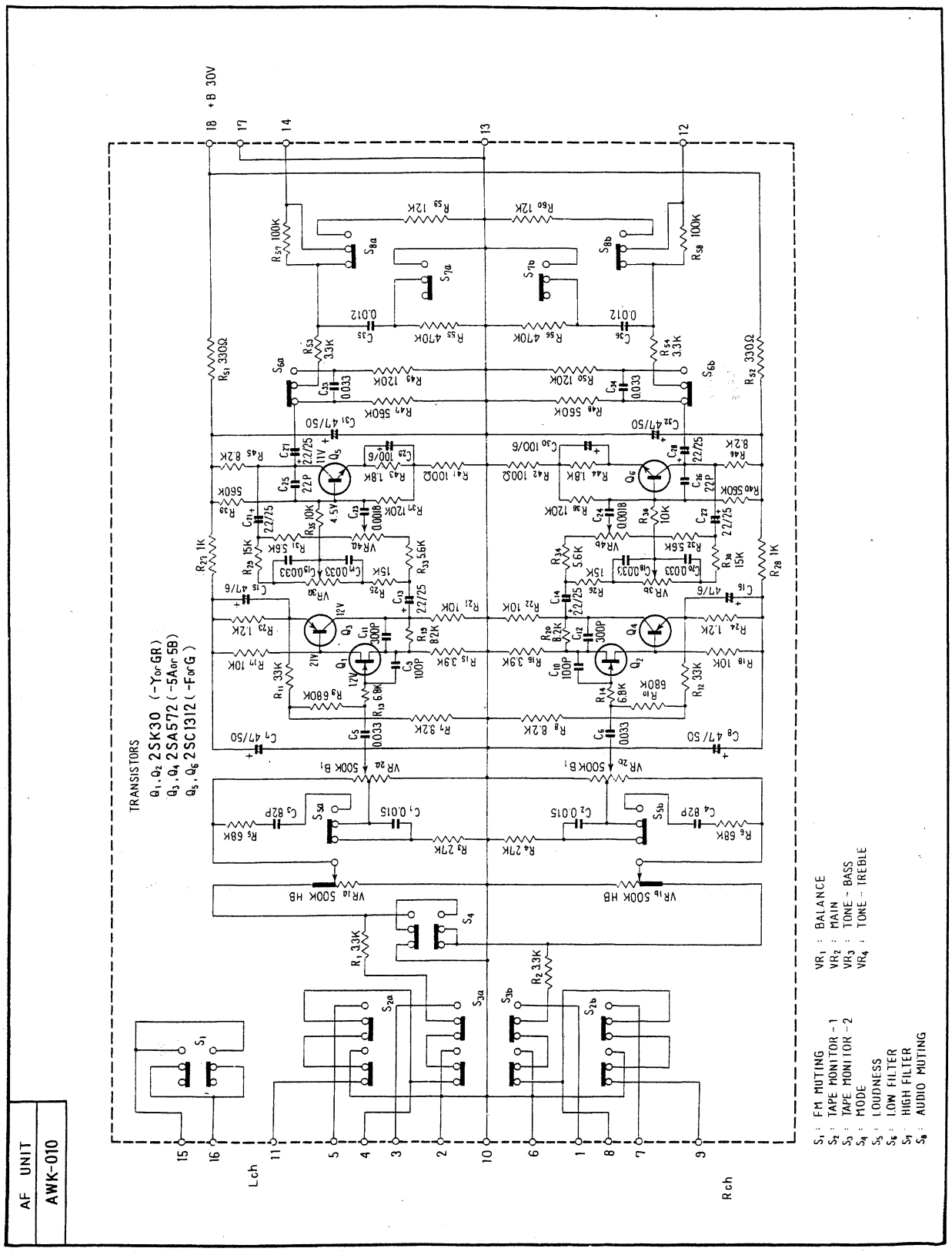
RESISTORS

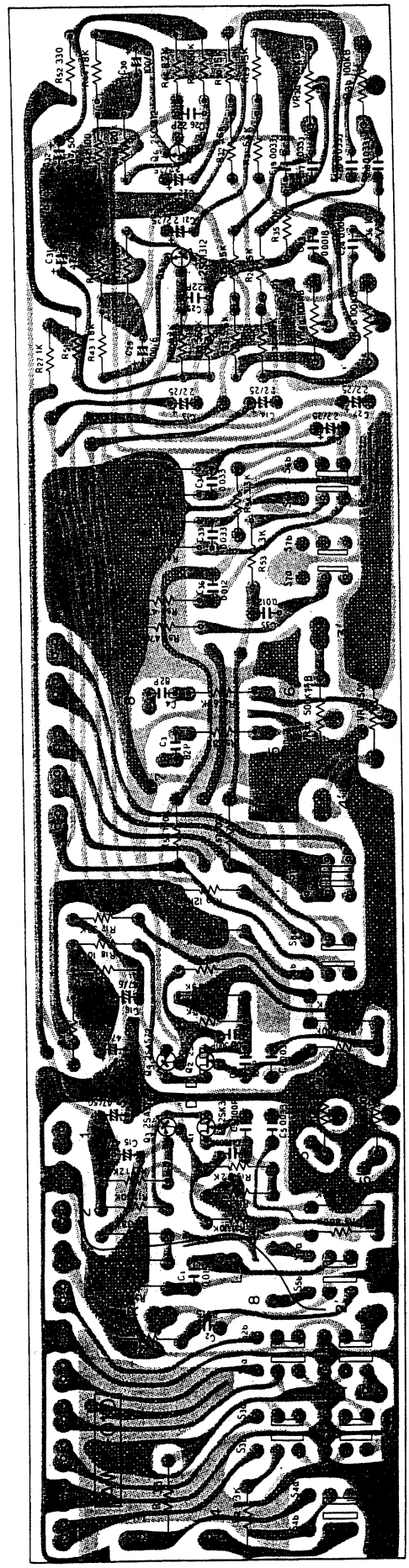
Symbol	Description		Part No.		
R1	Carbon film	1k	RD¼PS	102JNL	
R2	Carbon film	1k	RD¼PS	102JNL	
R3	Carbon film	56k	RD¼PS	563JNL	
R4	Carbon film	56k	RD¼PS	563JNL	
R5	Carbon film	1M	RD¼PS	105JNL	
R6	Carbon film	1M	RD¼PS	105JNL	
R7	Carbon film	390	RD¼PS	391JNL	
R8	Carbon film	390	RD¼PS	391JNL	
R9	Carbon film	470k	RD¼PS	474JNL	
R10	Carbon film	470k	RD¼PS	474JNL	
R11	Carbon film	56k	RD¼PS	563JNL	
R12	Carbon film	56k	RD¼PS	563JNL	
R13	Carbon film	330k	RD¼PS	334JNL	
R14	Carbon film	330k	RD¼PS	334JNL	
R15	Carbon film	3.3k	RD¼PS	332JNL	
R16	Carbon film	3.3k	RD¼PS	332JNL	
R17	Carbon film	4.7k	RD¼PS	472JNL	
R18	Carbon film	4.7k	RD¼PS	472JNL	
R19	Carbon film	10k	RD¼PS	103JNL	
R20	Carbon film	10k	RD¼PS	103JNL	
R21	Carbon film	47k	RD¼PS	473JNL	
R22	Carbon film	47k	RD¼PS	473JNL	
R23	Carbon film	270k	RD¼PS	274JNL	
R24	Carbon film	270k	RD¼PS	274JNL	
R25	Carbon film	22k	RD¼PS	223JNL	
R26	Carbon film	22k	RD¼PS	223JNL	
R27	Carbon film	2.2k	RD¼PS	222JNL	
R28	Carbon film	2.2k	RD¼PS	222JNL	
R29	Carbon film	12k	RD¼PS	123JNL	
R30	Carbon film	12k	RD¼PS	123JNL	

SEMICONDUCTORS

Symbol	Description	Part No.	
Q1	2SC458LG-B or C Transistor		
Q2	2SC458LG-B or C Transistor		
Q3	2SC458LG-B or C Transistor		
Q4	2SC458LG-B or C Transistor		
Q5	2SC458LG-B or C Transistor		
Q6	2SC458LG-B or C Transistor		

10.7 AF UNIT(AWK-010)





COMPONENT SIDE

PARTS LIST AF UNIT

CAPACITORS

Symbol	Description			Part No.			
C1	Mylar	0.015	50V	CQMA	153K	50	
C2	Mylar	0.015	50V	CQMA	153K	50	
C3	Ceramic	82p	50V	CCDSL	820K	50	
C4	Ceramic	82p	50V	CCDSL	820K	50	
C5	Mylar	0.033	50V	CQMA	333K	50	
C6	Mylar	0.033	50V	CQMA	333K	50	
C7	Electrolytic	47	50V	CEA	470P	50	
C8	Electrolytic	47	50V	CEA	470P	50	
C9	Ceramic	100p	50V	CCDSL	101K	50	
C10	Ceramic	100p	50V	CCDSL	101K	50	
C11	Ceramic	300p	50V	CCDSL	301K	50	
C12	Ceramic	300p	50V	CCDSL	301K	50	
C13	Electrolytic	2.2	25V	CSSA	2R2X	25	
C14	Electrolytic	2.2	25V	CSSA	2R2X	25	
C15	Electrolytic	47	6V	CEA	470P	6	
C16	Electrolytic	47	6V	CEA	470P	6	
C17	Mylar	0.033	50V	CQMA	333J	50	
C18	Mylar	0.033	50V	CQMA	333J	50	
C19	Mylar	0.033	50V	CQMA	333J	50	
C20	Mylar	0.033	50V	CQMA	333J	50	
C21	Electrolytic	2.2	25V	CSSA	2R2X	25	
C22	Electrolytic	2.2	25V	CSSA	2R2X	25	
C23	Mylar	0.0018	50V	CQMA	182K	50	
C24	Mylar	0.0018	50V	CQMA	182K	50	
C25	Ceramic	22p	50V	CCDSL	220K	50	
C26	Ceramic	22p	50V	CCDSL	220K	50	
C27	Electrolytic	2.2	25V	CSSA	2R2X	25	
C28	Electrolytic	2.2	25V	CSSA	2R2X	25	
C29	Electrolytic	100	6V	CEA	101P	6	
C30	Electrolytic	100	6V	CEA	101P	6	
C31	Electrolytic	47	50V	CEA	470P	50	
C32	Electrolytic	47	50V	CEA	470P	50	
C33	Mylar	0.033	50V	CQMA	333K	50	
C34	Mylar	0.033	50V	CQMA	333K	50	
C35	Mylar	0.012	50V	CQMA	123K	50	
C36	Mylar	0.012	50V	CQMA	123K	50	

RESISTORS

Symbol	Description		Part No.		
VR1	Dual	100k-B	C82-049-0		
VR2	Dual	500k-B	ACV-105-0		
VR3	Dual	100k-B	ACV-202-A		
VR4	Dual	100k-B	ACV-202-A		
R1	Carbon film	3.3k	RD¼PS	332J	
R2	Carbon film	3.3k	RD¼PS	332J	
R3	Carbon film	27k	RD¼PS	273J	
R4	Carbon film	27k	RD¼PS	273J	
R5	Carbon film	68k	RD¼PS	683J	
R6	Carbon film	68k	RD¼PS	683J	
R7	Carbon film	8.2k	RD¼PS	822J	
R8	Carbon film	8.2k	RD¼PS	822J	
R9	Carbon film	680k	RD¼PS	684JNL	
R10	Carbon film	680k	RD¼PS	684JNL	
R11	Carbon film	33k	RD¼PS	333J	
R12	Carbon film	33k	RD¼PS	333J	
R13	Carbon film	6.8k	RD¼PS	682J	
R14	Carbon film	6.8k	RD¼PS	682J	
R15	Carbon film	3.9k	RD¼PS	392J	
R16	Carbon film	3.9k	RD¼PS	392J	
R17	Carbon film	10k	RD¼PS	103J	

Symbol	Description		Part No.	
R18	Carbon film	10k	RD¼PS 103J	
R19	Carbon film	8.2k	RD¼PS 822J	
R20	Carbon film	8.2k	RD¼PS 822J	
R21	Carbon film	10k	RD¼PS 103J	
R22	Carbon film	10k	RD¼PS 103J	
R23	Carbon film	1.2k	RD¼PS 122J	
R24	Carbon film	1.2k	RD¼PS 122J	
R25	Carbon film	15k	RD¼PS 153J	
R26	Carbon film	15k	RD¼PS 153J	
R27	Carbon film	1k	RD¼PS 102J	
R28	Carbon film	1k	RD¼PS 102J	
R29	Carbon film	15k	RD¼PS 153J	
R30	Carbon film	15k	RD¼PS 153J	
R31	Carbon film	5.6k	RD¼PS 562J	
R32	Carbon film	5.6k	RD¼PS 562J	
R33	Carbon film	5.6k	RD¼PS 562J	
R34	Carbon film	5.6k	RD¼PS 562J	
R35	Carbon film	10k	RD¼PS 103J	
R36	Carbon film	10k	RD¼PS 103J	
R37	Carbon film	120k	RD¼PS 124JNL	
R38	Carbon film	120k	RD¼PS 124JNL	
R39	Carbon film	560k	RD¼PS 564JNL	
R40	Carbon film	560k	RD¼PS 564JNL	
R41	Carbon film	100	RD¼PS 101J	
R42	Carbon film	100	RD¼PS 101J	
R43	Carbon film	1.8k	RD¼PS 182J	
R44	Carbon film	1.8k	RD¼PS 182J	
R45	Carbon film	8.2k	RD¼PS 822J	
R46	Carbon film	8.2k	RD¼PS 822J	
R47	Carbon film	560k	RD¼PS 564JNL	
R48	Carbon film	560k	RD¼PS 564JNL	
R49	Carbon film	120k	RD¼PS 124JNL	
R50	Carbon film	120k	RD¼PS 124JNL	

Symbol	Description		Part No.	
R51	Carbon film	330	RD¼PS 331J	
R52	Carbon film	330	RD¼PS 331J	
R53	Carbon film	3.3k	RD¼PS 332J	
R54	Carbon film	3.3k	RD¼PS 332J	
R55	Carbon film	470k	RD¼PS 474JNL	
R56	Carbon film	470k	RD¼PS 474JNL	
R57	Carbon film	100k	RD¼PS 104JNL	
R58	Carbon film	100k	RD¼PS 104JNL	
R59	Carbon film	12k	RD¼PS 123J	
R60	Carbon film	12k	RD¼PS 123J	

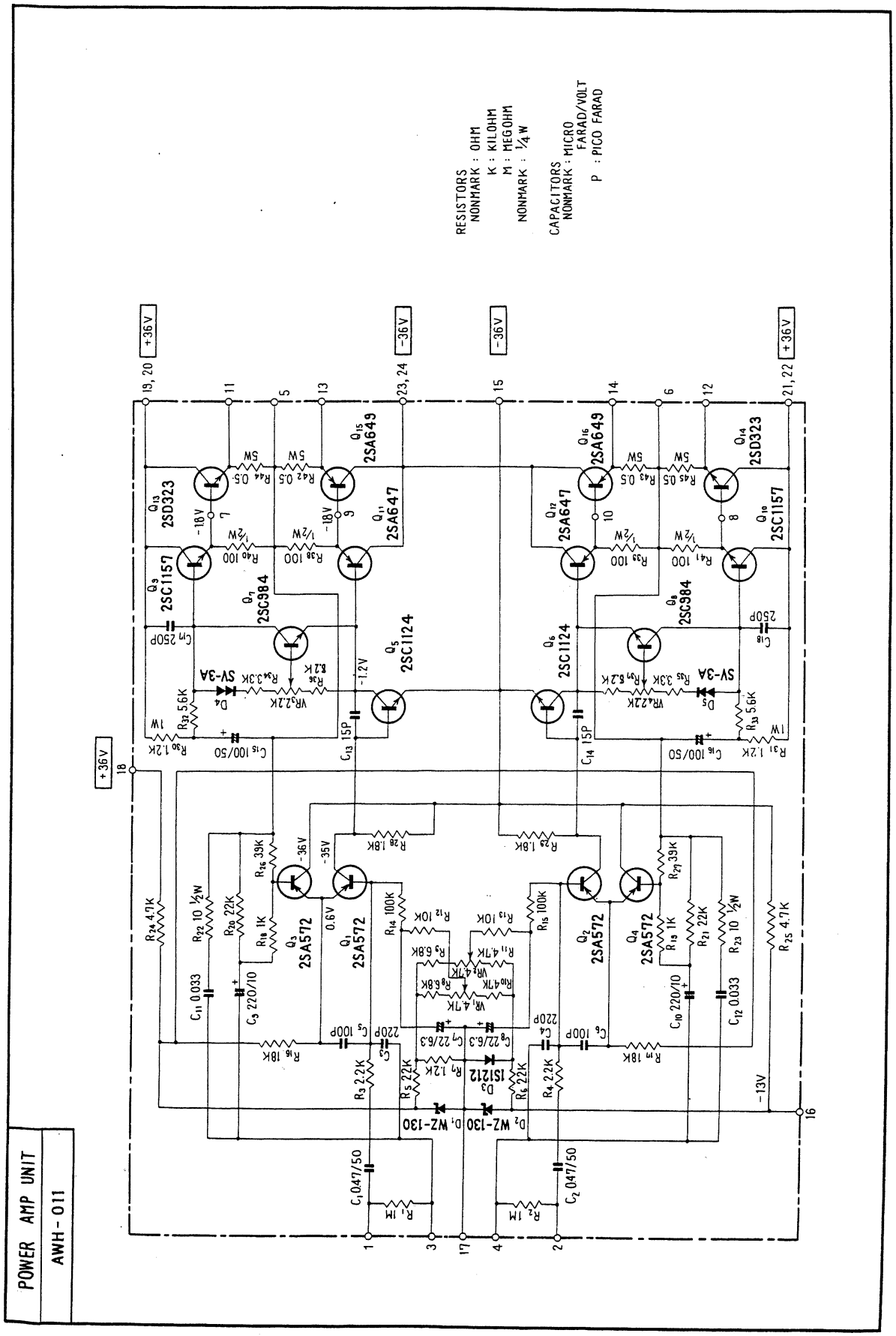
SEMICONDUCTORS

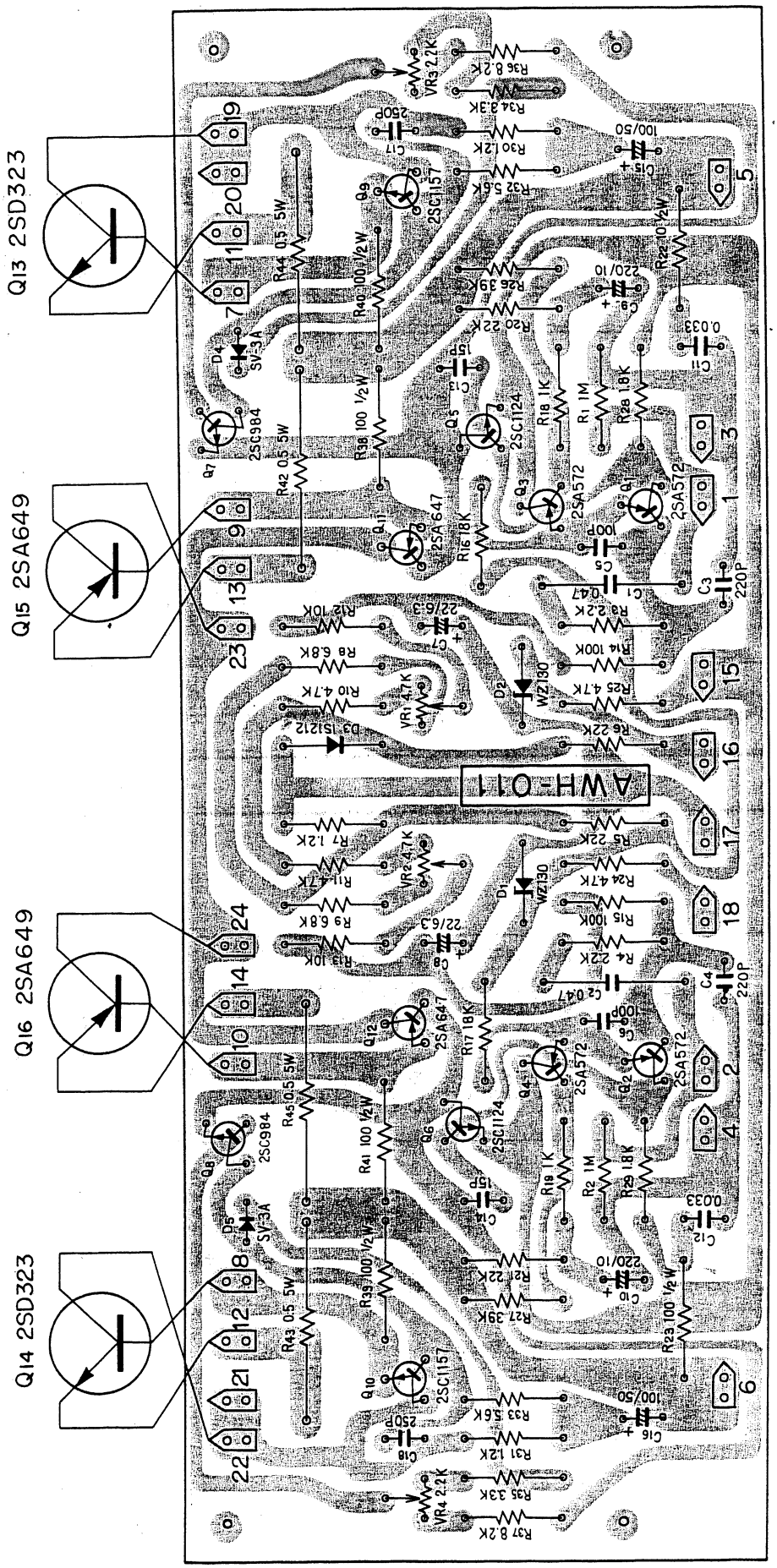
Symbol	Description		Part No.	
Q1	2SK30-Y or GR	FET		
Q2	2SK30-Y or GR	FET		
Q3	2SA572-5A or 5B	Transistor		
Q4	2SA572-5A or 5B	Transistor		
Q5	2SC1312F-F or G	Transistor		
Q6	2SC1312F-F or G	Transistor		

SWITCHES

Symbol	Description	Part No.	
S1	Push switch	ASG-017-0	
S2	Push switch	ASG-019-0	
S3	Push switch	ASG-019-0	
S4	Push switch	ASG-017-0	
S5	Push switch	ASG-017-0	
S6	Push switch	ASG-018-0	
S7	Push switch	ASG-017-0	
S8	Push switch	ASG-017-0	

10.8 POWER AMP UNIT(AWH-011)




Q13 2SD323
Q15 2SA649
Q16 2SA649
Q14 2SD323
AWH-011

PARTS LIST OF POWER AMP UNIT

CAPACITORS

Symbol	Description	Part No.	
C1	Mylar 0.47 50V	CQMA 474K 50	
C2	Mylar 0.47 50V	CQMA 474K 50	
C3	Ceramic 220p 50V	CCDSL 221K 50	
C4	Ceramic 220p 50V	CCDSL 221K 50	
C5	Ceramic 100p 50V	CCDSL 101K 50	
C6	Ceramic 100p 50V	CCDSL 101K 50	
C7	Electrolytic 22 6V	CEA 220P 6	
C8	Electrolytic 22 6V	CEA 220P 6	
C9	Electrolytic 220 10V	CEA 221P 10	
C10	Electrolytic 220 10V	CEA 221P 10	
C11	Mylar 0.033 50V	CQMA 333M 50	
C12	Mylar 0.033 50V	CQMA 333M 50	
C13	Ceramic 15p 50V	CCDSL 150K 50	
C14	Ceramic 15p 50V	CCDSL 150K 50	
C15	Electrolytic 100 50V	CEA 101P 50	
C16	Electrolytic 100 50V	CEA 101P 50	
C17	Ceramic 250p 50V	CCDSL 251K 50	
C18	Ceramic 250p 50V	CCDSL 251K 50	

RESISTORS

Symbol	Description	Part No.	
VR1	Semi-fixed 4.7k-B	C92-051-0	
VR2	Semi-fixed 4.7k-B	C92-051-0	
VR3	Semi-fixed 2.2k-B	ACP-001-0	
VR4	Semi-fixed 2.2k-B	ACP-001-0	

Symbol	Description	Part No.	
R1	Carbon film 1M	RD¼PS 105J	
R2	Carbon film 1M	RD¼PS 105J	
R3	Carbon film 2.2k	RD¼PS 222J	
R4	Carbon film 2.2k	RD¼PS 222J	
R5	Carbon film 22k	RD¼PS 223J	
R6	Carbon film 22k	RD¼PS 223J	
R7	Carbon film 1.2k	RD¼PS 122J	
R8	Carbon film 6.8k	RD¼PS 682J	
R9	Carbon film 6.8k	RD¼PS 682J	
R10	Carbon film 4.7k	RD¼PS 472J	
R11	Carbon film 4.7k	RD¼PS 472J	
R12	Carbon film 10k	RD¼PS 103J	
R13	Carbon film 10k	RD¼PS 103J	
R14	Carbon film 100k	RD¼PS 104J	
R15	Carbon film 100k	RD¼PS 104J	
R16	Carbon film 18k	RD¼PS 183J	
R17	Carbon film 18k	RD¼PS 183J	
R18	Carbon film 1k	RD¼PS 102J	
R19	Carbon film 1k	RD¼PS 102J	
R20	Carbon film 22k	RD¼PS 223J	
R21	Carbon film 22k	RD¼PS 223J	
R22	Carbon film 10 ½W	RD½PS 100J	
R23	Carbon film 10 ½W	RD½PS 100J	
R24	Carbon film 4.7k	RD¼PS 472J	
R25	Carbon film 4.7k	RD¼PS 472J	
R26	Carbon film 39k	RD¼PS 393J	
R27	Carbon film 39k	RD¼PS 393J	
R28	Carbon film 1.8k	RD¼PS 182J	
R29	Carbon film 1.8k	RD¼PS 182J	
R30	Metal oxide 1.2k 1W	RS1P 122K	

Symbol	Description			Part No.		
R31	Metal oxide	1.2k	1W	RS1P	122K	
R32	Carbon film	5.6k		RD¼PS	562J	
R33	Carbon film	5.6k		RD¼PS	562J	
R34	Carbon film	3.3k		RD¼PS	332J	
R35	Carbon film	3.3k		RD¼PS	332J	
R36	Carbon film	8.2k		RD¼PS	822J	
R37	Carbon film	8.2k		RD¼PS	822J	
R38	Carbon film	100	½W	RD½PS	101J	
R39	Carbon film	100	½W	RD½PS	101J	
R40	Carbon film	100	½W	RD½PS	101J	
R41	Carbon film	100	½W	RD½PS	101J	
R42	Wire wound	0.5	5W	RT5B	0R5K	
R43	Wire wound	0.5	5W	RT5B	0R5K	
R44	Wire wound	0.5	5W	RT5B	0R5K	
R45	Wire wound	0.5	5W	RT5B	0R5K	

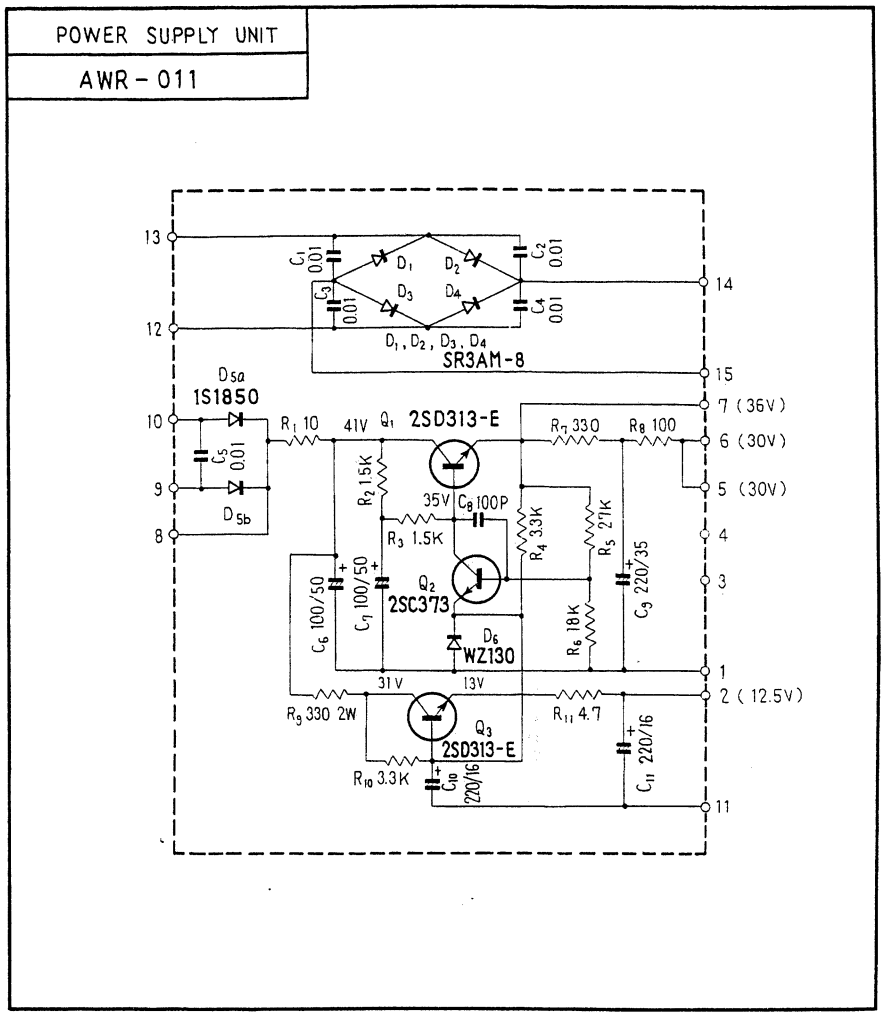
SEMICONDUCTORS

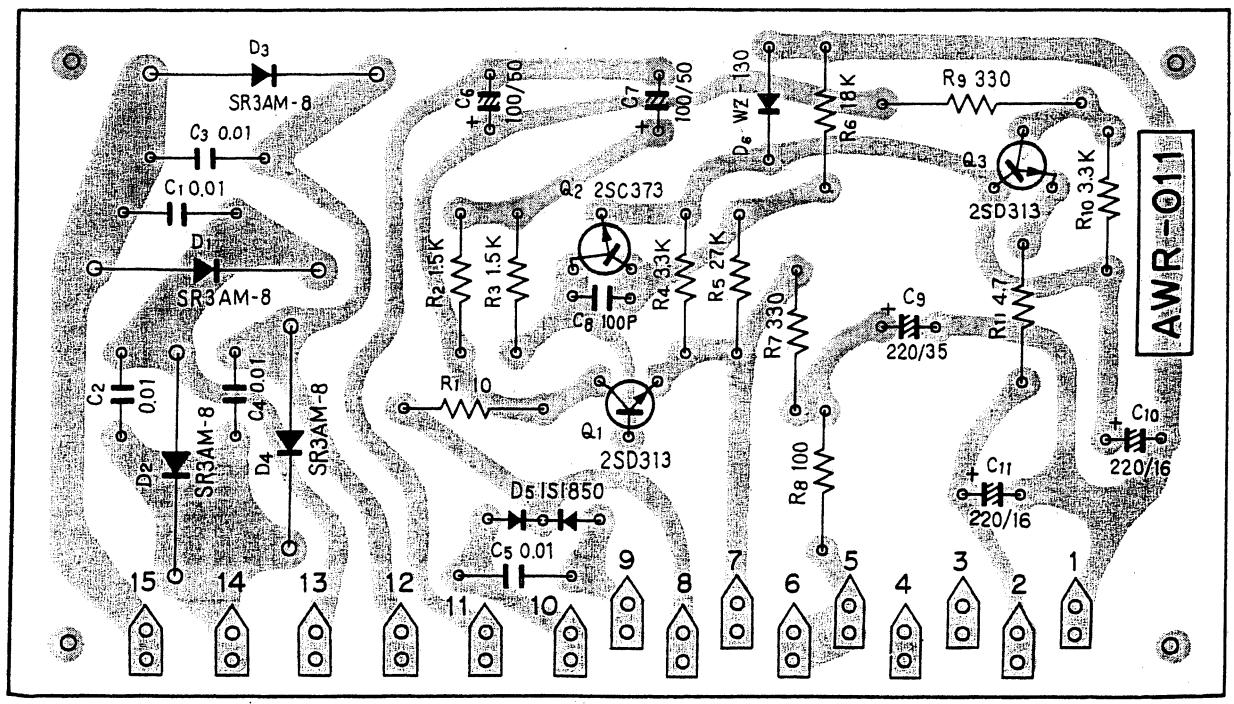
Symbol	Description		Part No.	
Q1	2SA572-5A, 5B, or 4B	Transistor		
Q2	2SA572-5A, 5B, or 4B	Transistor		
Q3	2SA572-5A, 5B, or 4B	Transistor		
Q4	2SA572-5A, 5B, or 4B	Transistor		
Q5	2SC1124-3 or 2	Transistor		
Q6	2SC1124-3 or 2	Transistor		
Q7	2SC984-B	Transistor		
Q8	2SC984-B	Transistor		
Q9	2SC1157-D or C	Transistor		
Q10	2SC1157-D or C	Transistor		
Q11	2SA647-D	Transistor		
Q12	2SA647-D	Transistor		
Q13	2SD323-F	Transistor		
Q14	2SD323-F	Transistor		
Q15	2SA649-L	Transistor		
Q16	2SA649-L	Transistor		
D1	WZ-130	Zener diode		
D2	WZ-130	Zener diode		
D3	1S1212	Diode		
D4	SV-3A	Varistor		
D5	SV-3A	Varistor		

OTHERS

Symbol	Description	Part No.	
	Heat sink	ANH-063-0	
	Heat sink (small)	ANH-064-0	
	Power transistor socket	K31-020-0	

10.9 POWER SUPPLY UNIT(AWR-011)





PARTS LIST OF POWER SUPPLY UNIT

CAPACITORS

Symbol	Description			Part No.			
C1	Ceramic	0.01	DC 1.4kV	C43-003-0			
C2	Ceramic	0.01	DC 1.4kV	C43-003-0			
C3	Ceramic	0.01	DC 1.4kV	C43-003-0			
C4	Ceramic	0.01	DC 1.4kV	C43-003-0			
C5	Ceramic	0.01	DC 1.4kV	C43-003-0			
C6	Electrolytic	100	50V	CEA	101P	50	
C7	Electrolytic	100	50V	CEA	101P	50	
C8	Ceramic	100p	50V	CCDSL	101K	50	
C9	Electrolytic	220	35V	CEA	221P	35	
C10	Electrolytic	220	16V	CEA	221P	16	
C11	Electrolytic	220	16V	CEA	221P	16	

RESISTORS

Symbol	Description			Part No.		
R1	Carbon film	10		RD¼PS	100J	
R2	Carbon film	1.5k		RD¼PS	152J	
R3	Carbon film	1.5k		RD¼PS	152J	
R4	Carbon film	3.3k		RD¼PS	332J	
R5	Carbon film	27k		RD¼PS	273J	
R6	Carbon film	18k		RD¼PS	183J	
R7	Carbon film	330		RD¼PS	331J	
R8	Carbon film	100		RD¼PS	101J	
R9	Metal oxide	330	2W	RS2P	331K	
R10	Carbon film	3.3k		RD¼PS	332J	
R11	Carbon film	4.7		RD¼PS	4R7J	

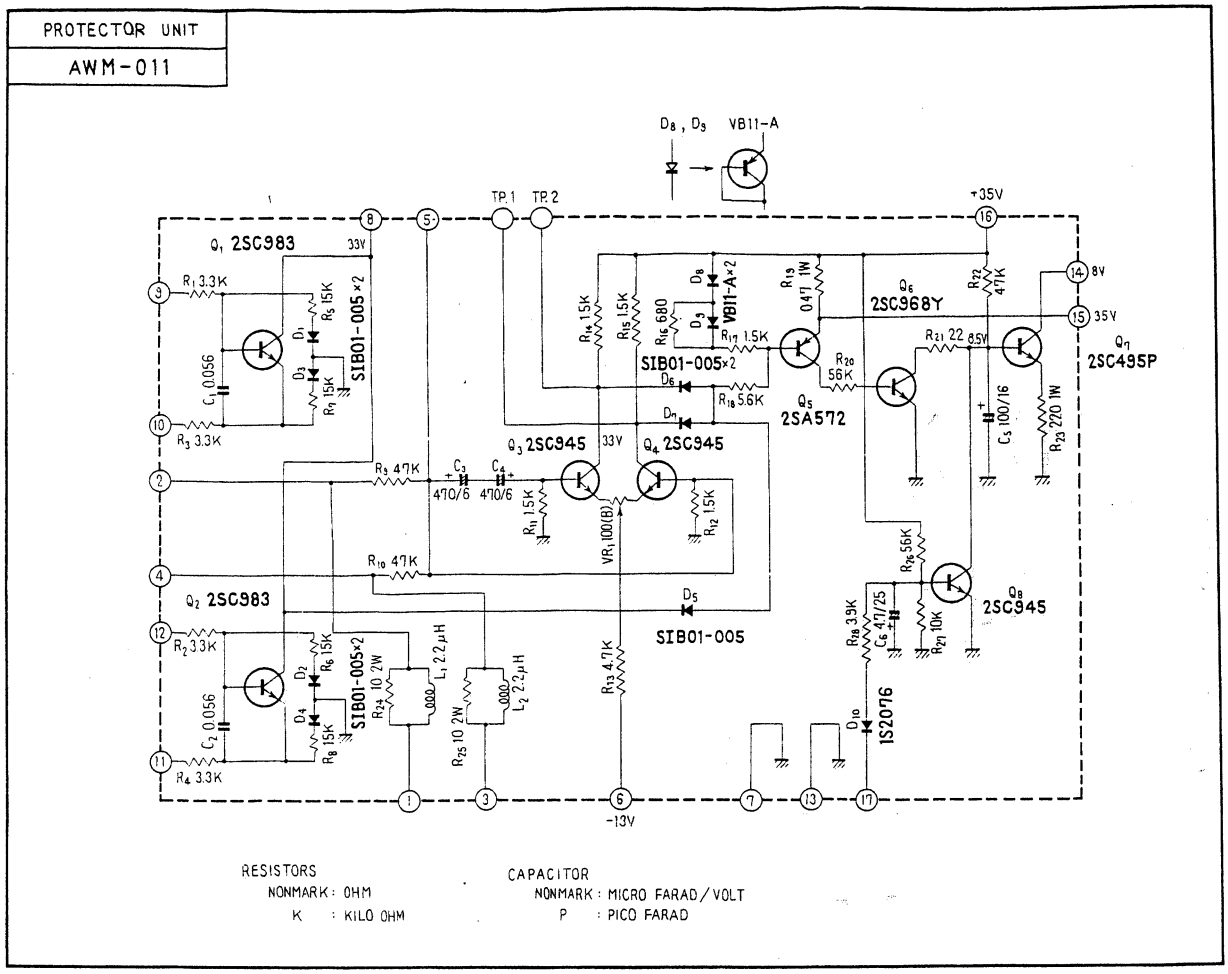
SEMICONDUCTORS

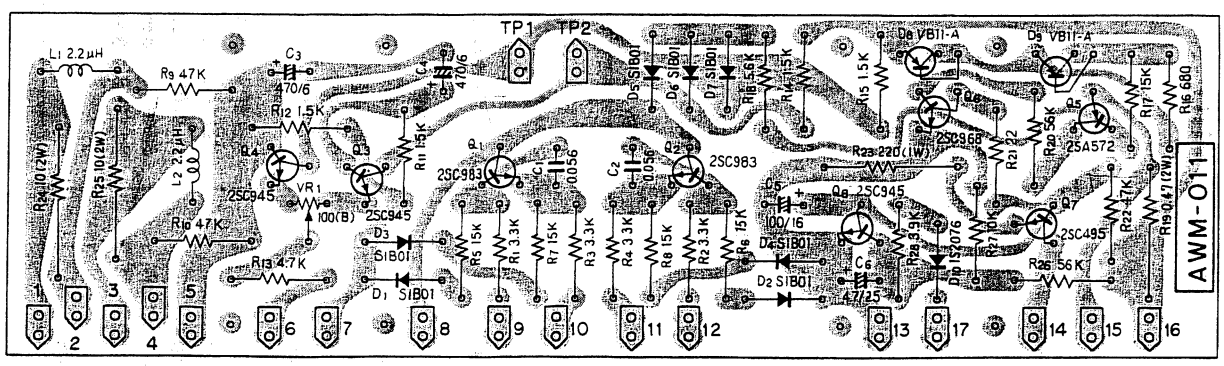
Symbol	Description		Part No.	
Q1	2SD313-E or D	Transistor		
Q2	2SC373	Transistor		
Q3	2SD313-E or D	Transistor		
D1	SR3AM-8	Diode		
D2	SR3AM-8	Diode		
D3	SR3AM-8	Diode		
D4	SR3AM-8	Diode		
D5	1S1850	Diode		
D6	WZ-130	Zener Diode		

OTHER

Symbol	Description	Part No.	
	Heat sink	ANH-004-A	

10.10 PROTECTOR UNIT(AWM-011)





PARTS LIST OF PROTECTOR UNIT

CAPACITORS

Symbol	Description			Part No.			
C1	Mylar	0.056	50V	CQMA	563K	50	
C2	Mylar	0.056	50V	CQMA	563K	50	
C3	Electrolytic	470	6V	CEA	471P	6	
C4	Electrolytic	470	6V	CEA	471P	6	
C5	Electrolytic	100	16V	CEA	101P	16	
C6	Electrolytic	4.7	25V	CEA	4R7P	25	

RESISTORS

Symbol	Description		Part No.		
VR1	Semi-fixed,	100-B	C92-063-0		
R1	Carbon film	3.3k	RD¼PS	332J	
R2	Carbon film	3.3k	RD¼PS	332J	
R3	Carbon film	3.3k	RD¼PS	332J	
R4	Carbon film	3.3k	RD¼PS	332J	
R5	Carbon film	15k	RD¼PS	153J	
R6	Carbon film	15k	RD¼PS	153J	
R7	Carbon film	15k	RD¼PS	153J	
R8	Carbon film	15k	RD¼PS	153J	
R9	Carbon film	47k	RD¼PS	473J	
R10	Carbon film	47k	RD¼PS	473J	
R11	Carbon film	1.5k	RD¼PS	152J	
R12	Carbon film	1.5k	RD¼PS	152J	
R13	Carbon film	4.7k	RD¼PS	472J	
R14	Carbon film	1.5k	RD¼PS	152J	
R15	Carbon film	1.5k	RD¼PS	152J	
R16	Carbon film	680	RD¼PS	681J	
R17	Carbon film	1.5k	RD¼PS	152J	
R18	Carbon film	5.6k	RD¼PS	562J	
R19	Metal oxide	0.47 1W	RN1P	R47K	
R20	Carbon film	56k	RD¼PS	563J	
R21	Carbon film	22	RD¼PS	220J	
R22	Carbon film	47k	RD¼PS	473J	
R23	Metal oxide	220 1W	RS1P	221K	
R24	Metal oxide	10 2W	RS2P	100K	
R25	Metal oxide	10 2W	RS2P	100K	
R26	Carbon film	56k	RD¼PS	563J	
R27	Carbon film	10k	RD¼PS	103J	
R28	Carbon film	3.9k	RD¼PS	392J	

SEMICONDUCTORS

Symbol	Description		Part No.	
Q1	2SC983-0 or Y	Transistor		
Q2	2SC983-0 or Y	Transistor		
Q3	2SC945-R	Transistor		
Q4	2SC945-R	Transistor		
Q5	2SA572-4	Transistor		
Q6	2SC968-2 or 3	Transistor		
Q7	2SC495P-Y	Transistor		
Q8	2SC945-R	Transistor		
D1	SIB01-005	Diode		
D2	SIB01-005	Diode		
D3	SIB01-005	Diode		
D4	SIB01-005	Diode		
D5	SIB01-005	Diode		
D6	SIB01-005	Diode		
D7	SIB01-005	Diode		

Symbol	Description	Part No.	
D8	VB11-A Varistor		
D9	VB11-A Varistor		
D10	1S2076 Diode		

COILS

Symbol	Description	Part No.	
L1	AF choke coil	T63-009-0	
L2	AF choke coil	T63-009-0	